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Michigan Timber Industry—An Assessment of Timber Product Output and Use, 1998

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FOREWORD

This bulletin reports findings of a survey of all primary wood-using mills in Michigan in 1998. Details of the industry's size, composition, use of roundwood, and generation and disposition of residues are discussed. Such detailed information is necessary for intelligent planning and decisionmaking in wood procurement, forest resource management, forest industry development, and forest research.

Special thanks are given to the primary wood-using firms that supplied information for this study and to the Michigan Department of Natural Resources for canvassing these wood-using firms. Their cooperation is greatly appreciated.

In this bulletin, all volumes are reported in product-specific standard units and/or cubic feet. When necessary, volumes reported by mills in nonstandard units were converted to standard units using regional conversion factors. Reported trends and changes in the Michigan primary wood-using industry are based on comparisons with the previous survey conducted in 1996. Row and column data of tables may not sum due to rounding, but data in each table cell are accurately displayed.

Note

The accuracy of this report depends a great deal on the information supplied by each of the mills canvassed for this report.

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Michigan Timber Industry—An Assessment of Timber Product Output and Use, 1998

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HIGHLIGHTS

PRIMARY TIMBER INDUSTRY—INDUSTRIAL ROUNDWOOD

- In 1998, Michigan's primary wood-using industry was comprised of 319 mills, including 28 mills that sawed less than 50 thousand board feet (table 1 and fig. 1).
- Between 1996 and 1998, the primary wood-using industry increased by one mill.
- In 1998, Michigan's primary wood-using industry processed 357 million cubic feet of roundwood—a 3-percent increase since 1996 (table 2).
- Michigan's eight pulp mills and four particleboard plants processed 213 million cubic feet of roundwood in 1998, a 4-percent decrease from 1996. Pulp mills and particleboard plants processed 60 percent of all industrial roundwood in the State.
- Hardwoods accounted for 78 percent of the roundwood volume processed by the State's primary wood-using industry in 1998.
- In 1998, 361 million cubic feet of industrial roundwood was harvested from Michigan's forests, an increase of 1 percent from 1996 (table 3). Softwood production decreased by 4 percent, while hardwood production increased by 3 percent.
- The decrease in softwood production can be attributed to decreased use of softwoods in pulpwood and industrial fuelwood. The increase in hardwood production is linked to the increase in aspen, soft maple, hard maple, and ash saw log production.
- Even though pulpwood production decreased from 1996 to 1998, pulpwood still is the predominant roundwood product harvested from Michigan's forest (fig. 2).
- The Upper Peninsula produced nearly 52 percent of the State's industrial roundwood in 1998 (fig. 3).
- The Western Upper Peninsula produced nearly 60 percent of the State's veneer logs and 42 percent of the State's pulpwood; the Northern Lower Peninsula produced 52 percent of the State's saw logs and all the State's industrial fuelwood.

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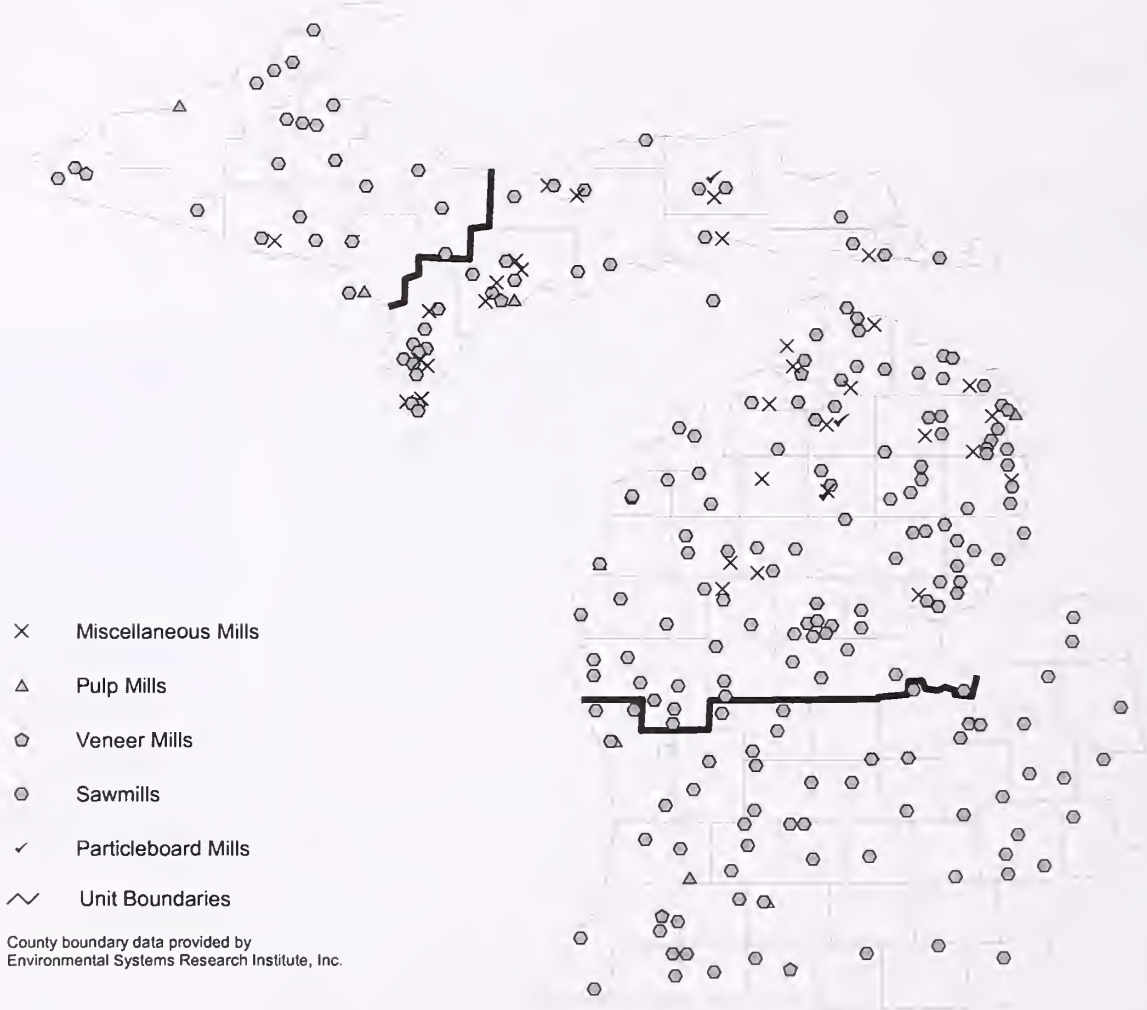


Figure 1.—*Location and kind of primary wood-using mills in Michigan, 1998.*

PULPWOOD

- Although pulpwood production decreased by 6 percent from 1996 to 1998, over 3 million cords of pulpwood (including both roundwood and mill residues generated by the State's other primary wood-using industries) were produced in Michigan for the sixth straight year in a row (table 4 and fig. 4).

- Roundwood accounted for 87 percent of the pulpwood produced in 1998, with hardwoods contributing 81 percent of the total roundwood production. Aspen alone accounted for nearly one-third of the total roundwood production (table 5).

- Michigan's pulpwood and particleboard mills used 90 percent of the State's total pulpwood production (table 5). The remaining 10 percent was shipped out of State, with the bulk of it going to Wisconsin for processing.

- Aspen, spruce, and jack pine were the major species exported in 1998, together making up 60 percent of the total exports.

- The Western Upper Peninsula produced 42 percent of the roundwood harvested for pulpwood in the State in 1998 (table 6).

- Four counties in the Western Upper Peninsula (Marquette, Ontonagon, Iron, and Houghton) each reported over 160 thousand standard cords of roundwood harvested for pulpwood in 1998.

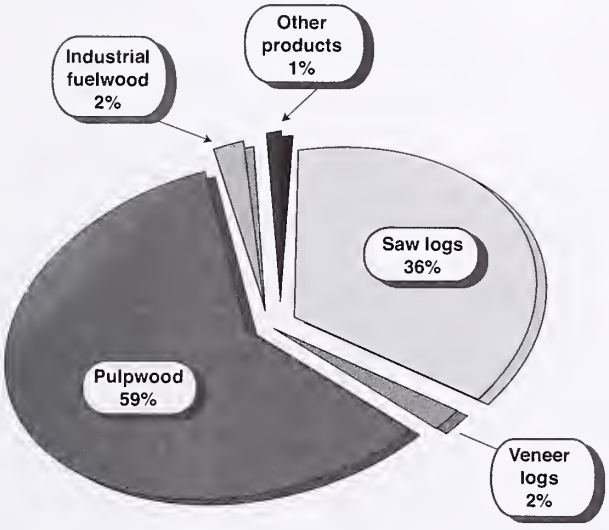


Figure 2.—*Industrial roundwood production by product, Michigan, 1998.*

Figure 3.—*Industrial roundwood production by Forest Survey Unit, Michigan, 1998.*

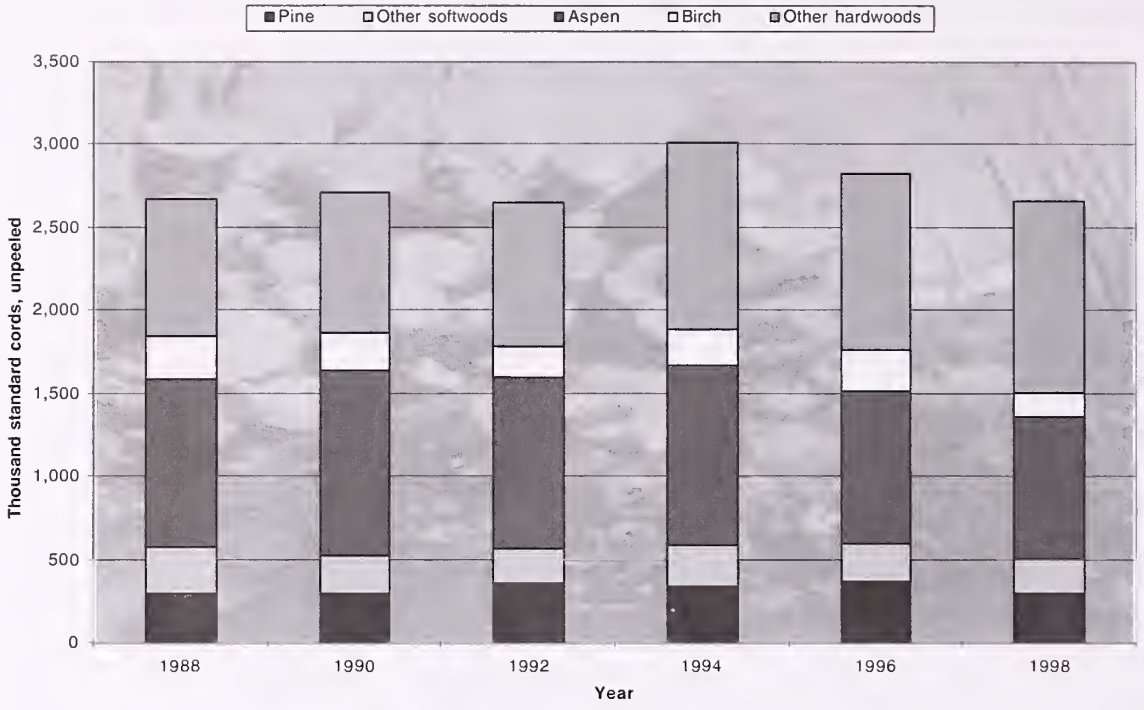


Figure 4.—*Michigan pulpwood production by species group for select years.*

- Aspen, soft maple, hard maple, and jack pine were the four major species groups of roundwood harvested for pulpwood in 1998. Combined, these four species groups accounted for 70 percent of the total roundwood production.

- Pulpwood receipts in 1998 totaled 3 million cords, a slight decrease from the 3.1 million cords recorded in 1996 (table 7).

- Approximately 90 percent of pulpwood received in 1998 came from roundwood; aspen accounted for 29 percent of the roundwood supplied to Michigan's pulp and particleboard mills.

- Over 91 percent of the pulpwood processed in the State for pulp and particleboard was supplied from Michigan forests in 1998. The remainder was imported from neighboring States, mainly Wisconsin, and Canada (table 8). Canada supplied 50 thousand cords of pulpwood, a decrease of 15 percent from 1996.

- Aspen, white birch, hard maple, and soft maple were the four main species imported, accounting for 75 percent of the total imports for the State (table 9).

SAW LOGS

- In 1998, 757 million board feet of saw logs were harvested in Michigan, an increase of over 183 million board feet (32 percent) from 1996 (table 10).

- Much of the increase was associated with jack pine, soft maple, aspen, and hard maple.

- The foremost saw log species harvested in 1998 included hard maple (134 million board feet), red oak (106 million board feet), red pine (103 million board feet), and aspen (103 million board feet).

- Saw log receipts increased by 38 percent from 1996 to 1998; most of the increase was associated with hard maple, jack pine, aspen, and spruce.

- Michigan sawmills processed 92 percent of the State's production of saw logs (table 11 and fig. 5). The remaining 8 percent was exported to Wisconsin, Indiana, Canada, and Ohio.

- As in 1996, Wisconsin and Indiana received over 87 percent of saw logs exported from Michigan's forests. Hard maple was once again the largest volume by species shipped to Wisconsin mills, while red oak remained the largest volume by species shipped to Indiana mills.

- In 1998, hard maple, aspen, red pine, and red oak accounted for over 46 percent of saw logs exported from the State.

- Nearly 52 percent of the State's saw log production came from the Northern Lower Peninsula in 1998 (table 12).

- Alcona, Newaygo, and Wexford Counties in the Northern Lower Peninsula produced more than 20 million board feet of saw logs in 1998.

- In 1998, 4 percent of the saw log volume was imported into the State (table 13). Most of the imported saw log volume came from Wisconsin and Canada.

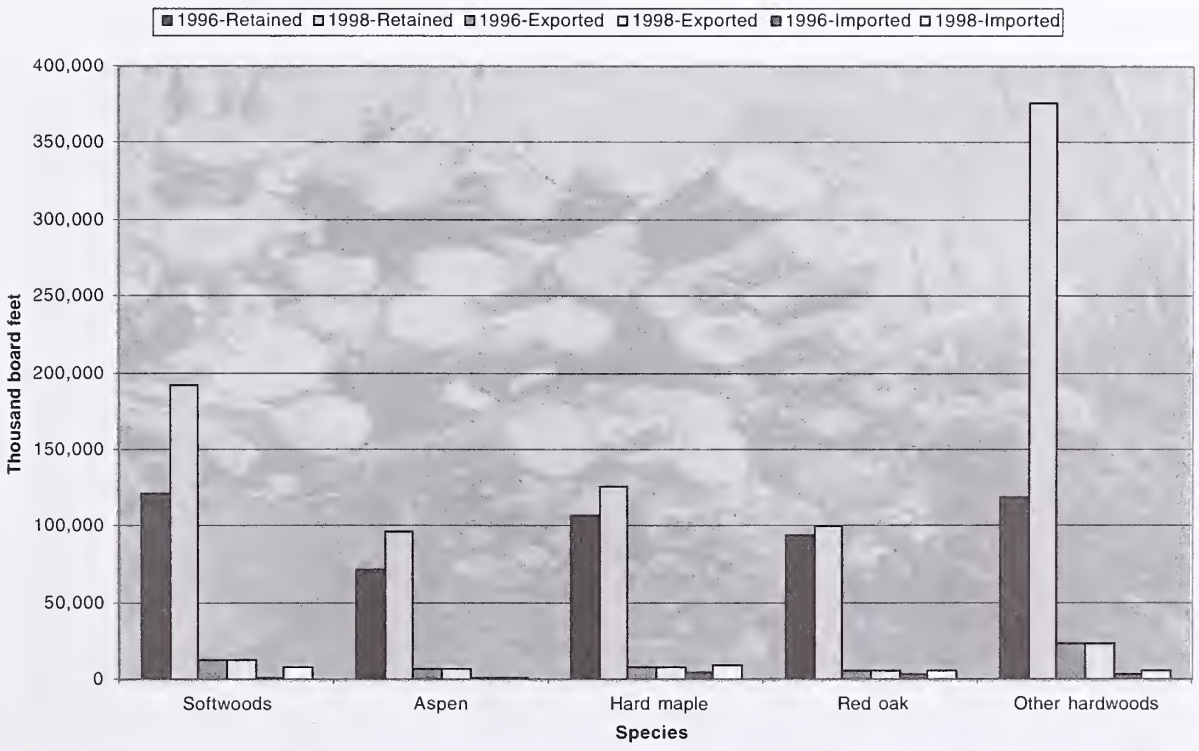


Figure 5.—*Saw log production exported, imported, and retained by species group in Michigan, 1996 and 1998.*

VENEER LOGS

- Veneer log production decreased by 32 percent to 41 million board feet in 1998, ending an upward trend dating back to 1988. Veneer log receipts also decreased by 33 percent, going from 55 million board feet in 1996 to 37 million board feet in 1998 (table 14).

- Aspen veneer log production decreased by 11 million board feet between 1996 and 1998. Hard maple replaced aspen as the number one species produced for veneer logs in the State (table 15).

- Hard maple and aspen accounted for nearly 62 percent of all veneer logs produced in the State.

- In 1998, over 48 percent of the veneer log volume harvested was retained in Michigan for processing (table 16 and fig. 6). The remaining volume was shipped out of State, most of which (59 percent) went to Wisconsin.

- As in 1996, hard maple was the number one species of veneer log exported from Michigan.

- Over 59 percent of all veneer log volume was produced in the Western Upper Peninsula in 1998.

- Michigan's forests supplied over 54 percent of the veneer logs used in the State's mills in 1998 (table 17). Most of the remaining volume came from Wisconsin.

- Aspen and hard maple accounted for more than 75 percent of the veneer log volume processed in the State. Nearly half of the aspen processed in Michigan veneer mills came from Wisconsin forests (table 18).

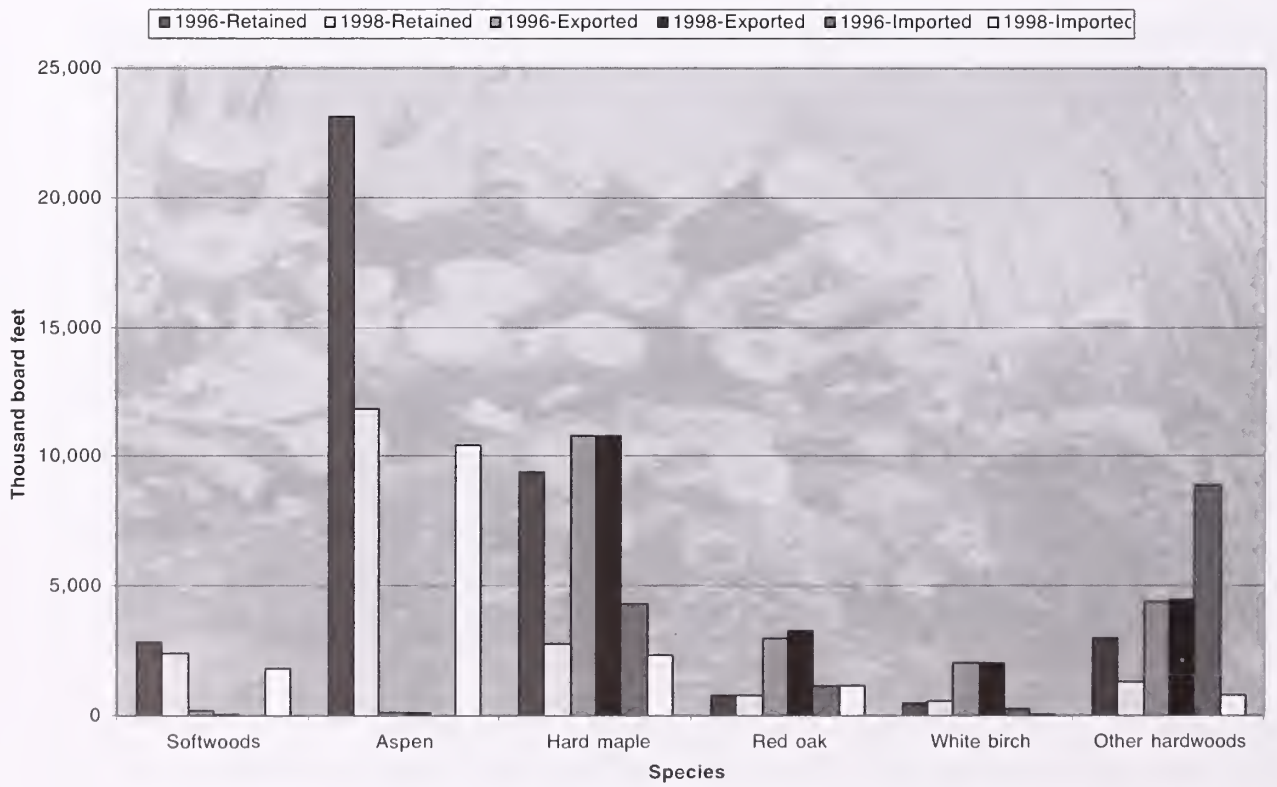


Figure 6.—*Veneer production exported, imported, and retained by species group in Michigan, 1996 and 1998.*

OTHER PRODUCTS

- In 1998, industrial fuelwood totaled over 8 million cubic feet, a decrease of over 57 percent between surveys (table 3).
- The use of softwood species for industrial fuelwood decreased dramatically between surveys. Only 2.5 million cubic feet of the industrial fuelwood produced in the State were from softwoods, a decrease of 80 percent since 1996.
- Hardwood species used for industrial fuelwood also decreased between surveys—by 16 percent.
- As was the case in 1996, all of the State's industrial fuelwood was produced in the Northern Lower Peninsula.
- Other industrial roundwood harvests decreased in Michigan between surveys, going from 4.5 million cubic feet in 1996 to 3.5 million cubic feet in 1998. These products include excelsior/shavings bolts, cabin logs, posts and pole products, and other miscellaneous products.
- Almost 68 percent of the volume for these other products was cut from northern white-cedar. Posts and cabin logs were the main products produced.

TIMBER REMOVALS

- In the process of harvesting industrial roundwood in 1998, 338 million cubic feet of the State's growing-stock volume was removed from timberland. Of this volume, 314 million cubic feet, or 93 percent was used for products. The remaining 24 million cubic feet was left on the ground as logging residue (table 19 and fig. 7).
- Over 172 million cubic feet of growing stock were removed from the timberlands of the Upper Peninsula, with aspen accounting for 23 percent of those removals (table 20).

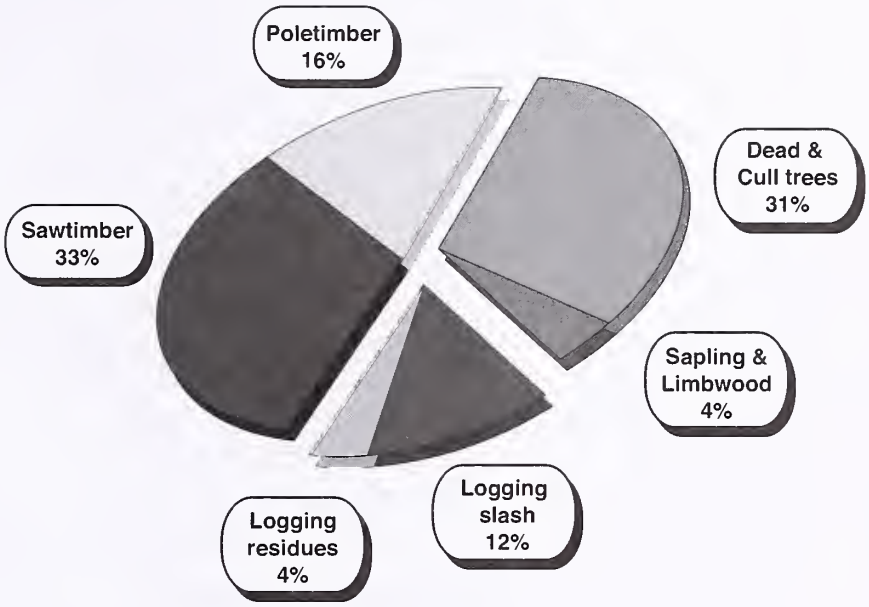


Figure 7.—*Distribution of timber removals for industrial roundwood by source of material, Michigan, 1998.*

- In 1998, industrial roundwood harvesting also removed over 1.1 billion board feet of wood from the sawtimber portion of growing-stock inventory (table 21). This was an 11-percent increase from 1996.

- Roughly 44 percent of all sawtimber removals occurred in the Northern Lower Peninsula, the area of the State where saw log production was concentrated.

- Red pine and jack pine together made up more than 67 percent of the total sawtimber removals for softwoods in 1998.

- As was the case in 1996, aspen, hard maple, red pine, soft maple, and red oak accounted for more than two-thirds of all sawtimber removals in Michigan in 1998. Hard and soft maples combined accounted for 28 percent of all sawtimber removals.

HARVEST RESIDUES

- Harvesting of industrial roundwood products left over 99 million cubic feet of harvest residues on the ground in 1998 (table 22), an increase of roughly 7 percent over 1996.

- As was the case in 1996, the Upper Peninsula had nearly 60 percent of the State's total harvest residues; this correlates with a concentration of pulpwood production in the region.

- Hard maple, aspen, red pine, and soft maple accounted for over 62 percent of all harvest residues produced in the State. Red pine and jack pine accounted for 63 percent of all softwood harvest residue produced.

PRIMARY MILL RESIDUES

- In 1998, Michigan's primary wood-using industry produced as byproducts 2.9 million green tons of wood and bark residues (table 23).

- Bark made up about 36 percent of the total green weight volume of mill residues (fig. 8).

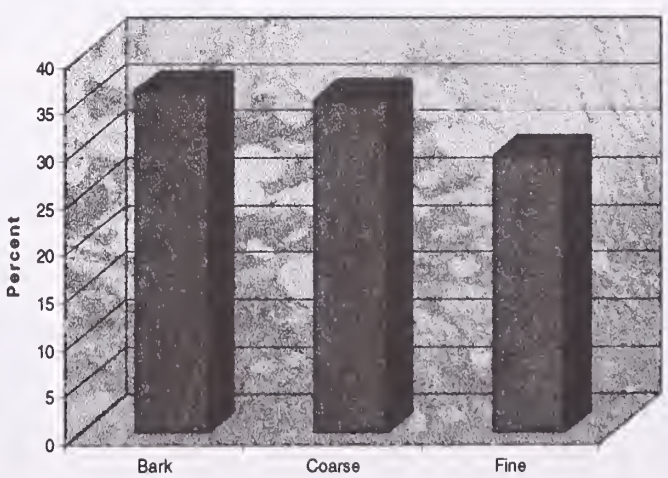


Figure 8.—*Distribution of residues generated by primary wood-using mills by type of residue, Michigan, 1998.*

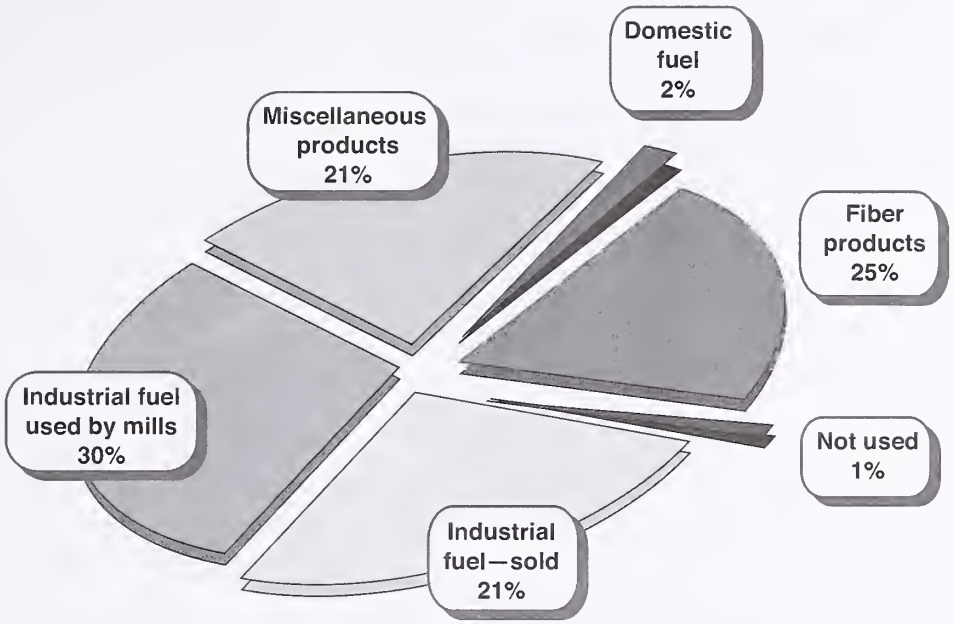


Figure 9.—*Methods of disposal of residues generated by primary wood-using mills, Michigan, 1998.*

- More than 1.6 percent of all mill residues went unused. The largest use of mill residue was for industrial fuel, which consumed 51 percent of all residues (fig. 9).

- Of the mill residue used for industrial fuel, 59 percent was used on site, while an additional 41 percent was sold to other mills or industries for their fuel needs.

- Over 64 percent of coarse wood residue was used for fiber products, with most of the remaining coarse wood residue used for industrial fuel or other miscellaneous uses such as livestock bedding or mulch.

- Nearly 59 percent of fine wood residue was used for industrial fuel. Most of the remaining fine wood residue went into miscellaneous products like livestock bedding and mulch.

- Almost three-quarters of the bark residues produced were burned as industrial fuel, and almost one-quarter of the remaining residue was used for miscellaneous uses.

- Over 42 percent of the State's mill residues were generated in the Northern Lower Peninsula.

REGIONAL TRENDS

Eastern Upper Peninsula

- The Eastern Upper Peninsula produced over 66 million cubic feet of industrial roundwood in 1998, a decrease of 6 percent from 1996 to 1998.
- Over 18 percent of the State's roundwood production came from the timberlands of the Eastern Upper Peninsula.
- Saw log production increased by 66 percent between 1996 and 1998, and accounted for over 12 percent of the State's total saw log production.
- Veneer log production decreased from 2.9 million cubic feet in 1996 to 775 thousand cubic feet in 1998 and represented 12 percent of the State's total veneer log production.
- Although pulpwood production decreased by 14 percent between 1996 and 1998, the Eastern Upper Peninsula produced 22 percent of the State's total production of pulpwood.
- Forty-eight percent of the State's post production and 54 percent of the cabin log production in 1998 were supplied from the timberlands of the Eastern Upper Peninsula.
- In 1998, 47 mills—including 30 sawmills, 1 veneer mill, 1 pulp mill, 1 particleboard mill, and 14 miscellaneous mills—operated in the Eastern Upper Peninsula.

Western Upper Peninsula

- In 1998, over 120 million cubic feet of roundwood was produced in the Western Upper Peninsula of Michigan, one-third of the State's total roundwood output.
- Industrial roundwood production increased by 3 percent between 1996 and 1998. Softwood output levels increased by 20 percent while hardwoods decreased by less than 1 percent.
- Saw log production increased by 75 percent between surveys, with the largest volume gains occurring in the jack pine and spruce species groups.
- Although pulpwood production decreased by nearly 7 percent between 1996 and 1998, pulpwood accounts for over 74 percent of all industrial roundwood production in the Western Upper Peninsula.
- Sixty percent of the State's veneer logs came from the Western Upper Peninsula.
- In 1998, the Western Upper Peninsula had 25 sawmills, 2 pulp mills, 1 veneer mill, 1 particleboard mill, and 1 other miscellaneous mill.

Northern Lower Peninsula

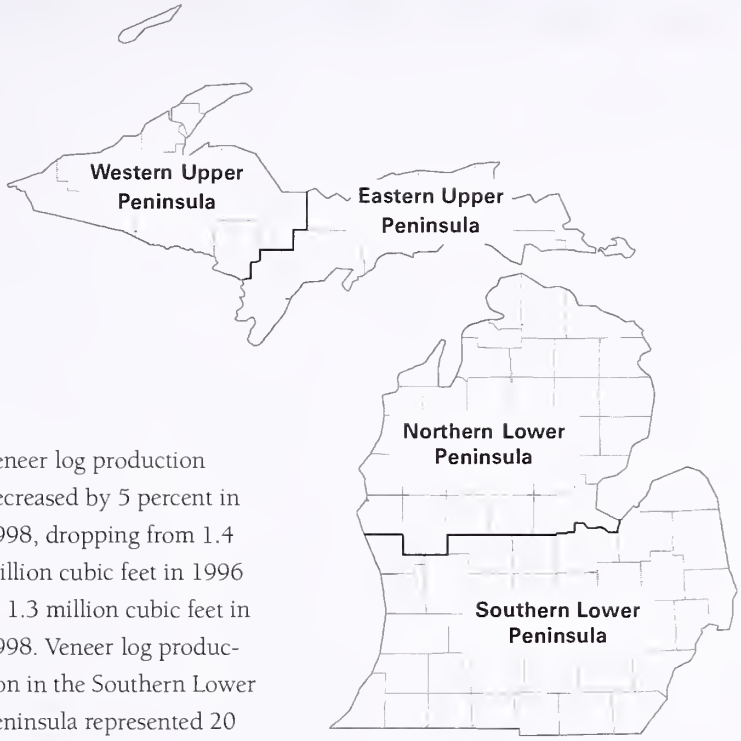
- The Northern Lower Peninsula produced over 145 million cubic feet of industrial roundwood in 1998, a decrease of less than 1 percent from 1996.
- Over 40 percent of the State's industrial roundwood came from the Northern Lower Peninsula in 1998.
- Saw log production accounted for 68 million cubic feet of industrial roundwood produced in this Survey Unit, and represented 52 percent of the State's total saw log production.
- In 1998, veneer log production decreased by 9 percent, going from 598 thousand cubic feet in 1996 to 544

thousand cubic feet in 1998. Veneer log production in this Unit accounted for 8 percent of the State's total veneer log volume produced.

- Pulpwood production from roundwood decreased slightly to 67 million cubic feet in 1998, a decrease of 1 percent or 708 thousand cubic feet from pulpwood produced from roundwood in 1996.

- Industrial fuelwood production in 1998 decreased by 58 percent, going from a total of 19.3 million cubic feet in 1996 to 8.1 million cubic feet in 1998. This was the only Survey Unit that reported harvesting industrial fuelwood in 1998.

- In 1998, 168 mills—including 148 sawmills, 2 pulp mills, 2 particleboard mills, 1 veneer mill, and 15 miscellaneous mills—operated in the Northern Lower Peninsula.



- Veneer log production decreased by 5 percent in 1998, dropping from 1.4 million cubic feet in 1996 to 1.3 million cubic feet in 1998. Veneer log production in the Southern Lower Peninsula represented 20 percent of the State's total veneer log production for 1998.

Southern Lower Peninsula

- Over 28 million cubic feet of industrial roundwood was produced in the Southern Lower Peninsula in 1998. This accounted for 8 percent of the State's total industrial roundwood production.

- Saw logs accounted for over 70 percent of the Unit's total industrial roundwood production in 1998. Saw log production increased by 24 percent between surveys.

- Pulpwood production increased by almost 33 percent but still only represented 3 percent of the State's total pulpwood production.

- Timberlands of the Southern Lower Peninsula produced 18 thousand cubic feet of posts, which represented 3 percent of the State's total post production.

- In 1998, the Southern Lower Peninsula had 69 sawmills, 3 pulp mills, and 2 veneer mills in operation.

APPENDIX

Study Methods

This study was a cooperative effort of the Michigan Department of Natural Resources (MIDNR) and the North Central Research Station (NCRS). Using mail questionnaires supplied by NCRS and designed to determine the size and composition of the State's primary wood-using industry, its use of roundwood, and its generation and disposition of wood residues, the MIDNR canvassed all primary wood-using mills within the State. The MIDNR followed up on nonresponding mills using additional mailings, telephone, and personal contacts until a 100-percent response was achieved. Completed questionnaires were sent to NCRS for editing and processing.

As part of data editing and processing, all industrial roundwood volumes reported on the questionnaires were converted to standard units of measure using regional conversion factors. Timber removals by source of material and harvest residues generated during logging were estimated from standard product volumes using factors developed from logging utilization studies previously conducted by NCRS. Finalized data on Michigan's industrial roundwood receipts were loaded into a regional timber removals database and supplemented with data on out-of-State uses of Michigan's roundwood to provide a complete assessment of Michigan's timber product output.

DEFINITION OF TERMS

Board foot

Unit of measure applied to roundwood. It relates to lumber that is 1 foot long, 1 foot wide, and 1 inch thick (or its equivalent).

Bolt

A short log no more than 8 feet long, to be sawn for lumber, peeled or sliced for veneer, shaved for excelsior, or converted into shingles, cooperage stock, dimension stock, blocks, blanks, or other products.

Central stem

The portion of a tree between a 1-foot stump and the minimum 4.0-inch top diameter outside bark, or the point where the central stem breaks into limbs.

Coarse mill residue

Wood residue suitable for chipping such as slabs, edgings, and veneer cores.

Commercial species

Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam, Osage-orange, and redbud.)

Cull removals

Net volume of rough and rotten trees plus the net volume in sections of the central stem of growing-stock trees that do not meet regional merchantability standards harvested for industrial roundwood products.

Dead removals

Net volume of dead trees harvested for industrial roundwood products.

Diameter at breast height (d.b.h.)

The outside bark diameter at 4.5 feet above the forest floor on the uphill side of the tree. For determining breast height, the forest floor includes the duff

layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

Fine mill residue

Wood residue not suitable for chipping such as sawdust and veneer clippings.

Forest land

Land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparing specified standards with basal area and /or number of trees, age or size, and spacing.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams or other bodies of water, or clearings in forest areas shall be classed as forest if less than 120 feet wide.

Growing-stock removals

The growing-stock volume removed from the timberland inventory by harvesting industrial roundwood products. (Note: Includes sawtimber removals, poletimber removals, and logging residues.)

Growing-stock tree

A live timberland tree of commercial species that meets specified standards of size, quality, and merchantability. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume

Net volume of growing-stock trees 5.0 inches d.b.h. and over, from 1 foot above the ground to a minimum 4.0-inch top diameter outside bark of the central stem or to the point where the central stem breaks into limbs.

Hardwoods

Dicotyledonous trees, usually broad-leaved and deciduous.

Harvest residues

The total net volume of unused portions of trees cut or killed by logging. (Note: Includes both logging residues and logging slash.)

Industrial fuelwood

A roundwood product, with or without bark, used to generate energy at manufacturing facilities and schools, correctional institutions, or electric generating plants.

Industrial roundwood exports

The quantity of industrial roundwood harvested in a geographical area and transported to other geographical areas.

Industrial roundwood imports

The quantity of industrial roundwood received from other geographical areas.

Industrial roundwood products

Saw logs, pulpwood, veneer logs, poles, commercial posts, pilings, cooperage logs, particleboard bolts, shaving bolts, lath bolts, charcoal bolts, and chips from roundwood used for pulp or board products.

Industrial roundwood production

The quantity of industrial roundwood harvested in a geographic area plus all industrial roundwood exported to other geographical areas.

Industrial roundwood receipts

The quantity of industrial roundwood received by commercial mills in a geographic area plus all industrial roundwood imported from other geographical areas.

Industrial roundwood retained

The quantity of industrial roundwood harvested from and processed by commercial mills within the same geographical area.

International 1/4-inch rule

A log rule or formula for estimating the board foot volume of logs, allowing 1/2-inch of taper for each 4-foot length. The rule appears in a number of forms that allow for kerf. In this form, 1/4-inch of kerf is assumed. This rule is used as the USDA Forest Service standard log rule in the Eastern United States.

Limbwood removals

Net volume of all portions of a tree other than the central stem (including forks, large limbs, tops, and stumps) harvested for industrial roundwood products.

Logging residue

The net volume of unused portions of the merchantable central stem of growing-stock trees cut or killed by logging.

Logging slash
The net volume of unused portions of the unmerchantable (non-growing stock) sections of trees cut or killed by logging.

Merchantable sections
Refers to sections of the central stem of growing-stock trees that meet either pulpwood or saw log specifications.

Net volume
Gross volume less deductions for rot, sweep, or other defects affecting use for roundwood products.

Noncommercial species
Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial roundwood products. Classified in volume tables as rough trees.

Nonforest land
Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, active Christmas tree plantations, orchards, nurseries, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 39.9-acre areas of water classified by the Bureau of the Census as land.) If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre to qualify as nonforest land.

Nonforest land removals
Net volume of trees on nonforest lands harvested for industrial roundwood products.

Poletimber
A growing-stock tree at least 5.0 inches d.b.h. but smaller than sawtimber size (9.0 inches d.b.h. for softwoods, 11.0 inches d.b.h. for hardwoods).

Poletimber removals
Net volume in the merchantable central stem of poletimber trees harvested for industrial roundwood products.

Primary wood-using mills
Mills receiving roundwood or chips from roundwood for processing into products such as lumber, veneer, and pulp.

Primary wood-using mill residue
Wood materials (coarse and fine) and bark generated at manufacturing plants that process industrial roundwood into principal products. These residues include wood products (byproducts) obtained incidental to production of principal products and wood materials not utilized for some product.

Rotten tree
A tree that does not meet regional merchantability standards because of excessive unsound cull.

Rough tree
A tree that does not meet regional merchantability standards because of excessive sound cull. Includes noncommercial tree species.

Roundwood
Logs, bolts, or other round sections cut from trees (including chips from roundwood).

Sapling
A live tree between 1.0 and 5.0 inches d.b.h.

Sapling removals
Net volume in saplings harvested for industrial roundwood products.

Saw log portion
That portion of the central stem of sawtimber trees between the stump and the saw log top.

Saw log top
The point on the central stem of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7.0 inches diameter outside bark for softwoods and 9.0 inches diameter outside bark for hardwoods.

Sawtimber removals
As used in table 19, sawtimber removals refers to the net volume in the merchantable central stem of sawtimber trees harvested for industrial roundwood products. (Note: Includes the saw log and upper stem portions of sawtimber trees.) When referring to the sawtimber volume removed from the timberland inventory as in table 21, sawtimber removals refers to the net volume in the saw log portion of sawtimber trees harvested for roundwood products or left on the ground as harvest residue, and is usually expressed in thousands of board feet (International 1/4-inch rule).

Sawtimber tree

A growing-stock tree containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting regional specifications for freedom from defect. Softwoods must be at least 9.0 inches d.b.h. and hardwoods must be at least 11.0 inches d.b.h.

Sawtimber volume

Net volume in the saw log portion of sawtimber trees.

Softwoods

Coniferous trees, usually evergreen, having needles or scale-like leaves.

Timber product output

The volume of roundwood products produced from an area's forests.

Timberland

Forest land that is producing, or is capable of producing, in excess of 20 cubic feet per acre per year of industrial roundwood products under natural conditions, is not withdrawn from timber utilization by statute or administrative regulation, and is not associated with urban or rural development.

Tree

A woody plant usually having one or more perennial stems, a more or less definitely formed crown of foliage, and a height of at least 12 feet at maturity.

Upper stem portion

That portion of the central stem of sawtimber trees between the saw log top and the minimum top diameter of 4.0 inches outside bark, or to the point where the central stem breaks into limbs.

Veneer log

A log or bolt used in the production of plywood, finished panels, containers, or veneer sheets, both rotary cut and sliced.

COMMON AND SCIENTIFIC NAMES OF TREE SPECIES MENTIONED IN THIS REPORT

SOFTWOODS

Pine

- Jack pine ..... *Pinus banksiana*
- Red pine ..... *Pinus resinosa*
- Eastern white pine ..... *Pinus strobus*

Spruce

- White spruce ..... *Picea glauca*
- Black spruce ..... *Picea mariana*

Balsam fir ..... *Abies balsamea*

Eastern hemlock ..... *Tsuga canadensis*

Tamarack ..... *Larix laricina*

Northern white-cedar ..... *Thuja occidentalis*

Eastern redcedar ..... *Juniperus virginiana*

HARDWOODS

White oak

- White oak ..... *Quercus alba*
- Bur oak ..... *Quercus macrocarpa*
- Chinkapin oak ..... *Quercus muehlenbergii*
- Swamp white oak ..... *Quercus bicolor*

Red oak

- Northern red oak ..... *Quercus rubra*
- Black oak ..... *Quercus velutina*
- Northern pin oak ..... *Quercus ellipsoidalis*

Hickory

- Bitternut hickory ..... *Carya cordiformis*
- Pignut hickory ..... *Carya glabra*
- Shagbark hickory ..... *Carya ovata*

Birch

- White birch ..... *Betula papyrifera*
- Yellow birch ..... *Betula alleghaniensis*

Hard maple
- Black maple ..... *Acer nigrum*
- Sugar maple ..... *Acer saccharum*

Soft maple
- Red maple ..... *Acer rubrum*
- Silver maple ..... *Acer saccharinum*

American beech ..... *Fagus grandifolia*

Ash
- Black ash ..... *Fraxinus nigra*
- White ash ..... *Fraxinus americana*
- Green ash ..... *Fraxinus pennsylvanica*

Balsam poplar ..... *Populus balsamifera*

Aspen
- Bigtooth aspen ..... *Populus grandidentata*
- Quaking aspen ..... *Populus tremuloides*

Eastern cottonwood ..... *Populus deltoides*

American basswood ..... *Tilia americana*

Black walnut ..... *Juglans nigra*

Elm
- American elm ..... *Ulmus americana*
- Rock elm ..... *Ulmus thomasii*
- Slippery elm ..... *Ulmus rubra*

Other hardwoods
- Northern catalpa ..... *Catalpa speciosa*
- Black cherry ..... *Prunus serotina*
- River birch ..... *Betula nigra*
- Black locust ..... *Robinia pseudoacacia*
- Honeylocust ..... *Gleditsia triacanthos*
- Red mulberry ..... *Morus rubra*
- Butternut ..... *Juglans cinerea*
- Black willow ..... *Salix nigra*
- Boxelder ..... *Acer negundo*
- Hackberry ..... *Celtis occidentalis*

TABLE TITLES

Table 1.—*Number of active primary wood-using mills by mill type in Michigan, 1977, 1984, 1988, 1990, 1992, 1994, 1996, and 1998*

Table 2.—*Industrial roundwood receipts by mill type in Michigan, 1977, 1984, 1988, 1990, 1992, 1994, 1996, and 1998*

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TABLES

Table 1.--Number of active primary wood-using mills by mill type in Michigan, 1977, 1984, 1988, 1990, 1992, 1994, 1996, and 1998

Kind of mill	1977	1984	1988	1990	1992	1994	1996	1998
Sawmills[1]								
Large[2]	20	26	31	26	30	36	30	37
Medium[3]	86	94	117	103	107	99	96	95
Small[4]	196	176	136	171	139	109	147	137
Total	302	296	284	300	276	244	273	269
Pulp mills[5]	8	9	12	12	11	11	12	12
Veneer mills	9	8	8	8	7	5	4	5
Other mills	19	26	32	35	23	24	29	33
Total	36	43	52	55	41	40	45	50
Total mills	338	339	336	355	317	284	318	319

[1] Mills persistently sawing 50 thousand board feet (mbf) or more annually.
(28 mills sawed under 50 mbf/year in 1998)

[2] Annual lumber production in excess of 5 million board feet.

[3] Annual lumber production from 1 million to 5 million board feet.

[4] Annual lumber production less than 1 million board feet.

[5] Includes flake board plants after 1977, formerly reported in "other mills" category.

Table 2.--Industrial roundwood receipts by mill type in Michigan, 1977, 1984, 1988, 1990, 1992, 1994, 1996, and 1998

(In million cubic feet)

Kind of mill	1977	1984	1988	1990	1992	1994	1996	1998
ALL SPECIES								
Pulp mills[1]	82.4	143.2	205.7	214.4	200.6	207.6	222.4	212.9
Sawmills	78.7	83.2	98.3	107.4	100.1	99.4	93.7	126.5
Other mills[2]	15.0	4.2	6.4	7.1	28.5	27.7	29.1	18.0
Total	176.1	230.6	310.4	328.9	329.2	334.6	345.2	357.5
SOFTWOODS								
Pulp mills[1]	28.2	30.4	36.9	41.2	33.1	29.8	37.7	34.8
Sawmills	10.5	10.3	18.5	23.3	22.7	21.3	21.8	35.9
Other mills[2]	3.4	2.3	0.1	0.7	13.1	8.9	15.8	7.0
Total	42.1	43.0	55.5	65.2	68.8	60.0	75.3	77.7
HARDWOODS								
Pulp mills[1]	54.2	112.8	168.8	173.2	167.5	177.8	184.7	178.2
Sawmills	68.2	72.9	79.8	84.1	77.4	78.0	71.9	90.7
Other mills[2]	11.6	1.9	6.3	6.4	15.4	18.8	13.4	10.9
Total	134.0	187.6	254.9	263.7	260.4	274.6	270.0	279.8

[1] Includes flakeboard plants after 1977, formerly reported in "other mill" category.

[2] Does not include treating plants or fuelwood receipts.

Table 3.--Industrial roundwood production by Forest Survey Unit, species group, and type of product, Michigan, 1998[1]

ALL UNITS

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Miscel-laneous	Poles		Posts		All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	MCF [3]	Cords [5]	MCF [3]	MCF [3]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]
Softwoods																
Balsam fir	7,243	1,364	–	–	71,643	5,660	17	9,048	632	–	–	–	–	78	80	7,753
Redcedar	6	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Tamarack	97	18	–	–	4,911	388	–	87	6	–	–	–	–	–	–	412
Spruce	18,965	3,571	850	138	57,008	4,504	223	85	6	–	–	–	–	8	9	8,451
Jack pine	53,060	9,991	–	–	208,514	16,473	–	18,825	1,316	–	–	–	–	–	–	27,780
Red pine	103,734	17,396	1,354	220	89,135	7,042	332	2,090	146	–	–	92,182	553	1	1	25,689
White pine	12,626	2,117	450	73	4,643	367	189	1,908	133	–	–	–	–	5	5	2,885
Other softwoods	–	–	–	–	–	–	–	3,459	242	–	–	–	–	–	–	242
N. white-cedar	5,659	1,066	–	–	5,250	415	676	755	53	–	16	–	–	1,622	1,667	3,892
Hemlock	4,076	684	–	–	67,176	5,307	143	278	19	–	–	–	–	–	–	6,153
Total	205,466	36,208	2,653	432	508,280	40,154	1,580	36,535	2,554	–	16	92,182	553	1,714	1,762	83,259
Hardwoods																
Soft maple	70,804	12,433	710	116	424,006	33,496	1	11,591	810	1	–	–	–	2	2	46,859
Hard maple	134,359	21,793	13,694	2,229	368,423	29,105	–	9,727	680	–	19	–	–	–	–	53,827
White birch	11,163	1,960	2,668	434	98,810	7,806	–	3,832	268	–	–	–	–	10	10	10,479
River birch	–	–	67	11	–	–	–	–	–	–	–	–	–	–	–	11
Yellow birch	11,604	1,954	826	134	42,148	3,330	–	127	9	–	–	–	–	–	–	5,427
Hickory	3,048	513	140	23	2,832	224	–	3	*	–	–	–	–	–	–	760
Hackberry	36	6	–	–	–	–	–	–	–	–	–	–	–	–	–	6
Beech	11,794	1,986	161	26	40,840	3,226	–	2,794	195	–	–	–	–	–	–	5,434
Ash	28,056	4,725	378	62	44,155	3,488	–	2,405	168	–	2	–	–	1	1	8,445
Butternut	10	2	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Black walnut	1,026	173	373	61	–	–	–	*	*	–	–	–	–	–	–	234
Yellow-poplar	1,486	261	3	*	–	–	–	–	–	–	–	–	–	–	–	261
Sycamore	240	42	–	–	–	–	–	–	–	–	–	–	–	–	–	42
Cottonwood	6,899	1,211	308	50	5,305	419	–	5	*	–	–	–	–	–	–	1,681
Balsam poplar	633	111	–	–	72,091	5,695	–	77	5	–	–	–	–	–	–	5,812
Aspen	103,473	18,201	12,018	1,957	857,412	67,736	17	19,769	1,382	527	–	–	–	9	9	89,828
Black cherry	16,348	2,871	1,181	192	16,739	1,322	–	293	21	–	–	–	–	–	–	4,406
Red oak group	106,226	18,643	4,105	668	56,049	4,428	5	24,981	1,746	–	–	–	–	1	1	25,490
White oak group	19,264	3,381	923	150	42,184	3,333	–	4,083	285	–	–	–	–	–	–	7,149
Black locust	6	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Willow	–	–	–	–	16	1	–	–	–	–	–	–	–	–	–	1
Sassafras	67	12	–	–	–	–	–	–	–	–	–	–	–	–	–	12
Basswood	23,995	4,214	762	124	73,874	5,836	–	831	58	16	–	–	–	–	–	10,247
Elm	1,314	231	17	3	851	67	–	65	5	–	–	–	–	–	–	305
Other hardwoods	89	15	–	–	7,524	594	–	123	9	–	–	–	–	–	–	618
Total	551,940	94,739	38,335	6,241	2,153,258	170,107	23	80,704	5,641	544	21	–	–	22	22	277,337
All species	757,408	130,947	40,988	6,673	2,661,538	210,261	1,603	117,240	8,194	544	37	92,182	533	1,736	1,784	360,597

(Table 3 continued)

EASTERN UPPER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Miscel- laneous	Poles		Posts		All products
	MBF [2]	*MCF* [3]	*MBF* [2]	*MCF* [3]	*Cords* [4]	*MCF* [3]	*MCF* [3]	*Cords* [5]	*MCF* [3]	*MCF* [3]	*MCF* [3]	*Pieces*	*MCF* [3]	*M pieces*	*MCF* [3]	*MCF* [3]
Softwoods								–	–	–						
Balsam fir	1,874	353	–	–	27,920	2,206	17	–	–	–	–	–	–	67	69	2,645
Tamarack	1	*	–	–	2,063	163	–	–	–	–	–	–	–	–	–	163
Spruce	4,247	800	145	24	25,012	1,976	86	–	–	–	–	–	–	8	9	2,894
Jack pine	15,455	2,910	–	–	57,079	4,509	–	–	–	–	–	–	–	–	–	7,419
Red pine	12,178	2,042	100	16	47,102	3,721	183	–	–	–	–	18,908	113	–	–	6,076
White pine	3,722	624	108	18	1,486	117	71	–	–	–	–	–	–	–	–	830
N. white-cedar	3,770	710	–	–	2,263	179	439	–	–	–	16	–	–	749	770	2,113
Hemlock	1,102	185	–	–	17,881	1,413	39	–	–	–	–	–	–	–	–	1,637
Total	42,350	7,624	353	58	180,807	14,284	834	–	–	–	16	18,908	113	825	848	23,776
Hardwoods																
Soft maple	7,708	1,353	84	14	92,452	7,304	–	–	–	1	–	–	–	–	–	8,672
Hard maple	16,738	2,715	2,014	328	90,775	7,171	–	–	–	–	–	–	–	–	–	10,214
White birch	4,101	720	626	102	25,340	2,002	–	–	–	–	–	–	–	–	–	2,824
Yellow birch	2,267	382	70	11	11,809	933	–	–	–	–	–	–	–	–	–	1,326
Beech	4,974	838	42	7	9,545	754	–	–	–	–	–	–	–	–	–	1,598
Ash	4,953	834	19	3	4,238	335	–	–	–	–	–	–	–	–	–	1,172
Butternut	1	*	–	–	–	–	–	–	–	–	–	–	–	–	–	*
Cottonwood	*	*	–	–	–	–	–	–	–	–	–	–	–	–	–	*
Balsam poplar	30	5	–	–	9,333	737	–	–	–	–	–	–	–	–	–	743
Aspen	8,171	1,437	1,327	216	147,968	11,689	17	–	–	527	–	–	–	–	–	13,887
Black cherry	793	139	67	11	5,183	409	–	–	–	–	–	–	–	–	–	560
Red oak group	1,394	245	103	17	1,887	149	–	–	–	–	–	–	–	–	–	411
White oak group	29	5	2	*	55	4	–	–	–	–	–	–	–	–	–	10
Basswood	1,175	206	47	8	7,979	630	–	–	–	16	–	–	–	–	–	860
Elm	5	1	–	–	9	1	–	–	–	–	–	–	–	–	–	2
Other hardwoods	–	–	–	–	2,797	221	–	–	–	–	–	–	–	–	–	221
Total	52,339	8,881	4,401	717	409,369	32,339	17	–	–	544	–	–	–	–	–	42,500
All species	94,689	16,505	4,755	774	590,176	46,624	851	–	–	544	16	18,908	113	825	848	66,274

(Table 3 continued)

WESTERN UPPER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Miscel-laneous	Poles		Posts		All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	MCF [3]	Cords [5]	MCF [3]	MCF [3]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]
Softwoods																
Balsam fir	5,286	995	–	–	40,755	3,220	–	–	–	–	–	–	–	–	–	4,215
Tamarack	24	4	–	–	2,841	224	–	–	–	–	–	–	–	–	–	229
Spruce	14,261	2,685	705	115	30,801	2,433	135	–	–	–	–	–	–	–	–	5,368
Jack pine	18,612	3,505	–	–	47,102	3,721	–	–	–	–	–	–	–	–	–	7,226
Red pine	9,747	1,635	1,254	204	25,386	2,005	29	–	–	–	–	5,432	33	–	–	3,906
White pine	3,352	562	271	44	2,559	202	59	–	–	–	–	–	–	–	–	867
N. white-cedar	1,343	253	–	–	2,761	218	195	–	–	–	–	–	–	159	163	829
Hemlock	2,405	403	–	–	49,192	3,886	89	–	–	–	–	–	–	–	–	4,379
Total	55,030	10,043	2,229	363	201,397	15,910	507	–	–	–	–	5,432	33	159	163	27,019
Hardwoods																
Soft maple	11,172	1,962	545	89	192,819	15,233	–	–	–	–	–	–	–	–	–	17,283
Hard maple	43,327	7,028	5,892	959	220,974	17,457	–	–	–	–	2	–	–	–	–	25,446
White birch	3,544	622	2,036	332	41,085	3,246	–	–	–	–	–	–	–	–	–	4,200
Yellow birch	8,659	1,458	720	117	29,806	2,355	–	–	–	–	–	–	–	–	–	3,930
Hickory	–	–	–	–	75	6	–	–	–	–	–	–	–	–	–	6
Beech	616	104	*	*	19,360	1,529	–	–	–	–	–	–	–	–	–	1,633
Ash	1,707	288	107	17	20,970	1,657	–	–	–	–	–	–	–	–	–	1,962
Butternut	9	2	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Cottonwood	–	–	–	–	15	1	–	–	–	–	–	–	–	–	–	1
Balsam poplar	76	13	–	–	31,637	2,499	–	–	–	–	–	–	–	–	–	2,513
Aspen	15,770	2,774	10,691	1,741	309,027	24,413	–	–	–	–	–	–	–	–	–	28,928
Black cherry	1,055	185	44	7	11,556	913	–	–	–	–	–	–	–	–	–	1,105
Red oak group	4,516	793	1,670	272	7,428	587	–	–	–	–	–	–	–	–	–	1,651
White oak group	39	7	14	2	945	75	–	–	–	–	–	–	–	–	–	84
Willow	–	–	–	–	16	1	–	–	–	–	–	–	–	–	–	1
Basswood	7,052	1,238	641	104	38,534	3,044	–	–	–	–	–	–	–	–	–	4,387
Elm	27	5	–	–	393	31	–	–	–	–	–	–	–	–	–	36
Other hardwoods	–	–	–	–	4,727	374	–	–	–	–	–	–	–	–	–	374
Total	97,570	16,478	22,362	3,640	929,369	73,420	–	–	–	–	2	–	–	–	–	93,542
All species	152,600	26,521	24,590	4,003	1,130,766	89,330	507	–	–	–	2	5,432	33	159	163	120,559

(Table 3 continued on next page)

(Table 3 continued)

NORTHERN LOWER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Miscel-laneous	Poles		Posts		All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	MCF [3]	Cords [5]	MCF [3]	MCF [3]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]
Softwoods																
Balsam fir	84	16	–	–	2,968	235	–	9,048	632	–	–	–	–	10	11	893
Tamarack	49	9	–	–	7	1	–	87	6	–	–	–	–	–	–	16
Spruce	432	81	–	–	1,188	94	3	85	6	–	–	–	–	–	–	184
Jack pine	18,927	3,564	–	–	102,969	8,135	–	18,825	1,316	–	–	–	–	–	–	13,014
Red pine	77,512	12,999	–	–	16,551	1,307	119	2,090	146	–	–	64,802	389	1	1	14,961
White pine	4,262	715	71	12	588	46	58	1,908	133	–	–	–	–	5	5	970
Other softwoods	–	–	–	–	–	–	–	3,459	242	–	–	–	–	–	–	242
N. white-cedar	545	103	–	–	226	18	42	755	53	–	–	–	–	714	734	949
Hemlock	527	88	–	–	90	7	15	278	19	–	–	–	–	–	–	130
Total	102,337	17,575	71	12	124,586	9,842	237	36,535	2,544	–	–	64,802	389	730	751	31,359
Hardwoods																
Soft maple	35,146	6,172	65	11	118,092	9,329	1	11,591	810	–	–	–	–	2	2	16,325
Hard maple	61,729	10,012	1,713	279	53,896	4,258	–	9,727	680	–	17	–	–	–	–	15,247
White birch	3,014	529	6	1	32,179	2,542	–	3,832	268	–	–	–	–	10	10	3,351
Yellow birch	642	108	31	5	532	42	–	127	9	–	–	–	–	–	–	164
Hickory	189	32	1	*	562	44	–	3	*	–	–	–	–	–	–	77
Beech	4,101	691	39	6	10,246	809	–	2,794	195	–	–	–	–	–	–	1,702
Ash	13,878	2,337	110	18	18,531	1,464	–	2,405	168	–	2	–	–	1	1	3,989
Black walnut	2	*	1	*	–	–	–	*	*	–	–	–	–	–	–	*
Cottonwood	4,951	869	–	–	3,032	240	–	5	*	–	–	–	–	–	–	1,109
Balsam poplar	461	81	–	–	30,651	2,421	–	77	5	–	–	–	–	–	–	2,508
Aspen	75,683	13,313	–	–	375,132	29,635	–	19,769	1,382	–	–	–	–	9	9	44,339
Black cherry	4,028	707	215	35	–	–	–	293	21	–	–	–	–	–	–	763
Red oak group	66,417	11,656	865	141	32,204	2,544	5	24,981	1,746	–	–	–	–	1	1	16,093
White oak group	7,668	1,346	158	26	25,343	2,002	–	4,083	285	–	–	–	–	–	–	3,659
Basswood	12,743	2,238	61	10	26,760	2,114	–	831	58	–	–	–	–	–	–	4,420
Elm	257	45	2	*	236	19	–	65	5	–	–	–	–	–	–	69
Other hardwoods	79	13	–	–	–	–	–	123	9	–	–	–	–	–	–	22
Total	290,989	50,150	3,267	532	727,397	57,464	6	80,704	5,641	–	19	–	–	22	22	113,835
All species	393,326	67,724	3,337	543	851,983	67,307	244	117,240	8,185	–	19	64,802	389	753	773	145,194

(Table 3 continued on next page)

(Table 3 continued)

SOUTHERN LOWER PENINSULA

Species group	Saw logs		Veneer logs		Pulpwood		Cabin logs	Industrial fuelwood		Excelsior/ shaving	Miscel- laneous	Poles		Posts		All products
	MBF [2]	MCF [3]	MBF [2]	MCF [3]	Cords [4]	MCF [3]	MCF [3]	Cords [5]	MCF [3]	MCF [3]	MCF [3]	Pieces	MCF [3]	M pieces	MCF [3]	MCF [3]
Softwoods																
Balsam fir	*	*	–	–	–	–	–	–	–	–	–	–	–	–	–	*
Redcedar	6	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Tamarack	23	4	–	–	–	–	–	–	–	–	–	–	–	–	–	4
Spruce	26	5	–	–	7	1	–	–	–	–	–	–	–	–	–	5
Jack pine	67	13	–	–	1,365	108	–	–	–	–	–	–	–	–	–	120
Red pine	4,296	720	–	–	96	8	1	–	–	–	–	3,040	18	–	–	747
White pine	1,290	216	–	–	10	1	1	–	–	–	–	–	–	–	–	218
Hemlock	42	7	–	–	13	1	–	–	–	–	–	–	–	–	–	8
Total	5,749	967	–	–	1490	118	2	–	–	–	–	3040	18	–	–	1,105
Hardwoods																
Soft maple	16,778	2,946	16	3	20,644	1,631	–	–	–	–	–	–	–	–	–	4,580
Hard maple	12,564	2,038	4,075	663	2,778	219	–	–	–	–	–	–	–	–	–	2,921
White birch	504	89	–	–	205	16	–	–	–	–	–	–	–	–	–	105
River birch	–	–	67	11	–	–	–	–	–	–	–	–	–	–	–	11
Yellow birch	36	6	5	1	1	*	–	–	–	–	–	–	–	–	–	7
Hickory	2,860	482	139	23	2,195	173	–	–	–	–	–	–	–	–	–	678
Hackberry	36	6	–	–	–	–	–	–	–	–	–	–	–	–	–	6
Beech	2,104	354	80	13	1,689	133	–	–	–	–	–	–	–	–	–	501
Ash	7,518	1,266	143	23	415	33	–	–	–	–	–	–	–	–	–	1,322
Butternut	1	*	–	–	–	–	–	–	–	–	–	–	–	–	–	*
Black walnut	1,024	173	372	61	–	–	–	–	–	–	–	–	–	–	–	233
Yellow-poplar	1,486	261	3	*	–	–	–	–	–	–	–	–	–	–	–	261
Sycamore	240	42	–	–	–	–	–	–	–	–	–	–	–	–	–	42
Cottonwood	1,947	342	308	50	2,257	178	–	–	–	–	–	–	–	–	–	570
Balsam poplar	66	12	–	–	471	37	–	–	–	–	–	–	–	–	–	49
Aspen	3,849	677	–	–	25,285	1,998	–	–	–	–	–	–	–	–	–	2,674
Black cherry	10,473	1,839	854	139	–	–	–	–	–	–	–	–	–	–	–	1,978
Red oak group	33,898	5,949	1,467	239	14,529	1,148	–	–	–	–	–	–	–	–	–	7,336
White oak group	11,528	2,023	750	122	15,842	1,251	–	–	–	–	–	–	–	–	–	3,397
Black locust	6	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Sassafras	67	12	–	–	–	–	–	–	–	–	–	–	–	–	–	12
Basswood	3,025	531	13	2	600	47	–	–	–	–	–	–	–	–	–	581
Elm	1,024	180	15	2	213	17	–	–	–	–	–	–	–	–	–	199
Other hardwoods	10	2	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Total	111,043	19,230	8,305	1,352	87,124	6,883	–	–	–	–	–	–	–	–	–	27,465
All species	116,792	20,197	8,305	1,352	88,614	7,000	2	–	–	–	–	3,040	18	–	–	28,569

[1] Product volumes converted to standard units of measure using regional conversion factors and to thousand cubic feet using factors from the Michigan Utilization Study of 1980 and other regional utilization studies.

[2] Thousand board feet, International 1/4-inch rule.

[3] Thousand cubic feet.

[4] Standard cords are 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

[5] Standard cords are 128 cubic feet consisting of 70 cubic feet of wood and 58 cubic feet of bark and air space.

* = Less than 1/2 unit of measure.

Rows and columns may not sum due to rounding.

Table 4.-- Pulpwood production by year, product form, and species group, Michigan, 1946-1998

(In thousand standard cords, unpeeled) [1]

Year	Roundwood									Residue	
	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	845	85	117	250	127	3	246	9	8	–	–
1947	679	86	139	149	134	2	153	6	10	–	–
1948	728	89	163	132	133	2	182	7	19	–	1
1949	519	38	124	62	97	*	168	5	25	–	–
1950	657	66	123	84	99	*	251	6	28	–	–
1951	935	103	140	169	110	*	371	8	34	–	–
1952	762	58	153	125	120	*	275	8	23	–	–
1953	724	67	102	71	81	*	365	5	33	–	–
1954	797	43	137	62	119	1	404	5	26	–	–
1955	808	38	122	36	111	*	459	4	38	–	–
1956	966	67	119	88	115	*	537	4	36	–	–
1957	980	70	147	61	118	*	521	7	56	–	–
1958	900	149	115	35	86	1	434	1	79	–	–
1959	1,053	197	109	39	83	3	523	4	90	1	4
1960	1,237	188	135	46	108	5	669	9	75	–	2
1961	1,106	156	115	44	96	4	558	16	96	2	19
1962	1,223	184	104	57	86	4	601	21	144	2	20
1963	1,297	174	121	62	88	3	662	23	131	4	29
1964	1,322	198	85	59	72	3	674	38	146	5	42
1965	1,365	224	74	64	65	2	704	32	149	5	46
1966	1,571	251	88	99	74	1	777	12	194	4	71
1967	1,344	193	90	60	75	1	646	11	200	3	65
1968	1,168	205	62	45	39	2	540	13	172	6	84
1969	1,302	207	44	63	39	2	606	23	196	8	114
1970	1,406	239	67	69	51	3	596	33	196	10	142
1971	1,267	235	53	43	45	2	548	23	196	13	109
1972	1,401	229	60	50	38	7	529	36	309	21	122
1973	1,585	204	68	58	46	5	603	59	365	28	149
1974	1,843	259	74	52	40	7	706	85	424	17	179
1975	1,280	235	74	50	45	5	436	36	217	22	160
1976	1,541	281	75	79	32	6	491	69	320	24	164
1977	1,595	262	94	62	48	10	532	62	333	21	171
1978	1,675	277	87	48	42	8	586	90	390	17	130
1979 [2]	1,981	350	85	45	39	10	709	109	456	15	163

1980	1,969	268	109	58	58	13	705	104	501	15	138
1981	1,838	237	104	39	45	17	652	105	473	15	151
1982	1,751	262	105	56	68	22	632	89	396	13	108
1983	2,157	256	101	48	78	31	889	130	451	21	152
1984	2,398	293	78	47	77	24	962	120	607	23	167
1985	2,376	314	93	37	84	53	977	110	545	17	146
1986	2,807	315	96	43	93	56	979	221	812	53	139
1987	2,746	292	98	39	97	68	896	228	799	72	157
1988	2,919	298	118	35	93	36	1,009	259	826	69	176
1989	3,114	254	143	42	115	44	1,104	280	871	79	182
1990	2,982	300	86	56	66	14	1,115	228	851	84	182
1991	3,016	309	103	47	64	16	1,093	188	942	76	176
1992	2,877	363	83	37	70	13	1,033	183	867	74	154
1993	3,155	380	101	37	67	12	1,142	197	973	72	174
1994	3,254	344	103	68	62	16	1,084	212	1,124	72	169
1995	3,112	355	79	66	66	11	1,003	177	1,078	90	188
1996	3,111	373	65	71	78	14	913	256	1,064	88	189
1997	3,066	392	52	71	46	12	894	169	1,183	38	209
1998	3,074	302	72	67	57	10	857	141	1,155	169	244

[1] *128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.*

[2] *Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.*

** = Less than 500 cords.*

Table 5.-- Pulpwood production by product form, species group, and destination, Michigan, 1998

(In thousand standard cords, unpeeled) [1]

Class of material and species group	Destination					
	Total	Michigan	Minnesota	Wisconsin	Canada	Other[3]
Roundwood						
Softwoods						
N. white-cedar	5	5	–	–	–	–
Balsam fir	71	48	1	18	5	–
Hemlock	67	64	–	3	–	–
Jack pine	209	183	–	25	–	–
Red pine	89	79	–	10	–	–
White pine	5	3	–	1	–	–
Spruce	57	22	–	25	11	–
Tamarack	5	4	–	1	–	–
Total	508	408	1	83	16	–
Hardwoods						
Ash	44	40	–	4	–	–
Aspen	857	800	–	57	–	–
Balsam poplar	72	72	–	*	–	–
Basswood	74	72	–	2	–	–
Beech	41	41	–	*	–	–
White birch	99	90	–	9	–	–
Yellow birch	42	40	–	2	–	–
Cottonwood	5	5	–	*	–	–
Elm	1	1	–	*	–	–
Hickory	3	3	–	*	–	–
Hard maple	369	358	–	10	–	–
Soft maple	424	417	–	7	–	–
Red oak	56	53	–	3	–	–
White oak	42	41	–	1	–	–
Other hardwoods	24	24	–	*	–	–
Total	2,153	2,057	–	96	–	–
Total roundwood	2,661	2,465	1	179	16	–
Residues [2]						
Softwood	169	87	–	69	14	–
Hardwood	244	220	–	24	–	–
Total	413	307		93	14	–
All material	3,074	2,772	1	272	30	–

[1] 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

[2] Chippable mill residues such as slabs, edgings, etc. Roundwood chips are included in roundwood.

[3] Mostly Western States.

* = Less than 500 cords.

Rows and columns may not sum due to rounding.

Table 6.--Pulpwood production from roundwood by Forest Survey Unit, county, and species group, Michigan, 1998

(In standard cords, unpeeled)

Forest Survey Unit and county [1]	All species	Species group										
		Northern white-cedar	Balsam fir	Hemlock	Jack pine	Red pine	White pine	Spruce	Tamarack	Ash	Aspen	Balsam poplar
Eastern Upper Peninsula												
Alger	92,513	293	2,916	2,376	4,971	3,321	150	1,747	257	1,267	10,646	1,092
Chippewa	93,307	495	5,302	1,434	11,815	7,736	452	5,011	289	364	34,076	771
Delta	93,725	512	6,643	2,776	8,176	7,293	380	4,946	578	482	24,532	2,254
Luce	68,191	105	1,275	6,652	6,387	5,919	54	2,428	87	614	12,647	628
Mackinac	88,192	356	5,094	1,499	8,014	6,574	169	3,774	206	420	31,908	1,044
Menominee	56,141	173	2,502	835	1,183	1,083	112	2,575	367	491	17,345	2,088
Schoolcraft	98,106	329	4,188	2,309	16,534	15,177	169	4,531	279	600	16,813	1,456
Total	590,176	2,263	27,920	17,881	57,079	47,102	1,486	25,012	2,063	4,238	147,968	9,333
Western Upper Peninsula												
Baraga	121,677	323	4,672	12,755	6,570	2,428	373	2,271	290	2,439	20,171	3,022
Dickinson	97,432	358	5,677	1,874	5,417	2,382	359	4,421	332	725	46,561	3,992
Gogebic	110,141	1	1,906	5,211	7,903	988	147	1,730	28	3,415	18,278	953
Houghton	163,469	332	5,000	3,922	2,727	4,037	320	3,867	275	4,323	38,412	4,953
Iron	183,253	804	11,942	4,234	8,278	7,175	524	6,955	1,008	2,581	50,475	5,976
Keweenaw	50,320	38	1,819	2,188	670	300	89	2,644	31	1,060	4,447	677
Marquette	242,874	888	8,906	15,470	15,021	6,675	481	6,567	854	1,869	67,214	8,414
Ontonagon	161,599	17	833	3,539	517	1,402	265	2,346	25	4,559	63,469	3,649
Total	1,130,766	2,761	40,755	49,192	47,102	25,386	2,559	30,801	2,841	20,970	309,027	31,637
Northern Lower Peninsula												
Alcona	42,608	–	30	–	940	1,045	–	–	–	281	25,489	8,572
Alpena	21,307	9	167	–	168	24	15	53	–	327	12,152	3,241
Antrim	26,930	19	153	–	8,887	253	43	37	–	473	6,084	85
Arenac	12,336	–	–	–	118	65	3	–	–	209	7,885	201
Bay	1,668	–	–	–	–	–	–	–	–	–	1,071	–
Benzie	20,390	–	–	–	1,848	9	7	–	–	1,851	5,485	55
Charlevoix	9,613	4	32	–	1,386	223	2	8	–	225	1,992	262
Cheboygan	68,889	67	863	–	11,077	828	130	424	–	228	37,102	1,810
Clare	26,518	–	–	–	444	381	–	–	–	1,030	13,599	380
Crawford	27,605	–	–	–	10,690	1,357	13	–	–	97	9,377	8
Emmet	25,852	3	22	–	2,975	202	71	5	–	156	12,982	901
Gladwin	36,190	–	–	–	513	162	2	–	–	609	21,168	1,206
Grand Traverse	13,127	–	–	–	1,833	245	4	–	–	623	4,759	19
Iosco	13,084	–	–	–	2,506	26	–	–	–	50	4,620	1,071
Isabella	22,947	–	–	–	678	142	1	–	–	161	13,010	759
Kalkaska	46,787	12	103	90	9,849	4,911	56	42	7	792	17,202	206
Lake	31,217	–	–	–	1,357	404	–	–	–	1,934	9,327	54
Leelanau	1,211	–	–	–	42	–	–	–	–	56	383	2
Manistee	26,895	–	–	–	1,655	81	–	–	–	1,823	7,931	437
Mason	10,006	–	–	–	–	–	–	–	–	640	3,145	224
Mecosta	14,879	–	–	–	285	91	–	–	–	73	6,944	550
Midland	19,841	–	–	–	50	150	–	–	–	1,149	9,140	86
Missaukee	37,119	–	–	–	4,074	933	–	–	–	821	17,389	182
Montmorency	29,519	–	68	–	2,466	88	10	54	–	303	13,526	3,214

Newaygo	22,746	--	--	--	10	38	--	--	--	802	6,254	163
Oceana	19,132	--	--	--	--	--	--	--	--	106	8,302	474
Ogemaw	15,130	--	3	--	1,100	36	10	--	--	441	7,828	638
Osceola	21,211	--	--	--	1,523	382	--	--	--	1,183	9,560	252
Oscoda	41,295	17	141	--	7,657	64	22	33	--	257	17,747	2,478
Otsego	51,932	--	15	--	13,207	2,190	150	10	--	380	19,435	291
Presque Isle	36,023	40	922	--	2,249	361	35	416	--	151	20,635	2,645
Roscommon	37,344	56	449	--	10,646	501	13	107	--	141	16,469	122
Wexford	20,631	--	--	--	2,736	1,358	--	--	--	1,160	7,139	63
Total	851,983	226	2,968	90	102,969	16,551	588	1,188	7	18,531	375,132	30,651
Southern Lower Peninsula												
Allegan	11,716	--	--	--	--	--	--	--	--	--	1,459	--
Barry	1,026	--	--	--	--	--	--	--	--	--	158	--
Branch	1,683	--	--	--	--	--	--	--	--	--	191	--
Calhoun	1,074	--	--	--	--	--	--	--	--	--	121	--
Cass	2,365	--	--	--	--	--	--	--	--	--	268	--
Gratiot	20	--	--	--	--	--	--	--	--	--	16	--
Huron	502	--	--	--	--	--	--	--	--	--	502	--
Ingham	51	--	--	--	--	--	--	--	--	5	25	--
Ionia	30	--	--	--	--	--	--	--	--	--	17	--
Jackson	13	--	--	13	--	--	--	--	--	--	--	--
Kalamazoo	1,269	--	--	--	--	--	--	--	--	--	153	--
Kent	9,173	--	--	--	--	--	--	--	--	261	2,913	123
Montcalm	10,062	--	--	--	--	--	--	--	--	70	4,532	198
Muskegon	20,394	--	--	--	--	--	--	--	--	34	5,739	1
Oakland	1,876	--	--	--	840	5	--	--	--	--	888	--
Ottawa	3,235	--	--	--	--	--	--	--	--	--	784	60
Saginaw	569	--	--	--	--	1	--	--	--	--	331	24
Sanilac	488	--	--	--	13	--	--	--	--	--	242	--
Shiawassee	3,534	--	--	--	--	--	--	--	--	39	540	--
St. Joseph	5,084	--	--	--	--	--	--	--	--	--	574	--
Tuscola	1,084	--	--	--	123	90	--	--	--	--	843	--
Van Buren	10,551	--	--	--	--	--	--	--	--	--	3,156	64
Wayne	2,813	--	--	--	390	--	10	7	--	6	1,833	--
Total	88,614	--	--	13	1,365	96	10	7	--	415	25,285	471
State total	2,661,538	5,250	71,643	67,176	208,514	89,135	4,643	57,008	4,911	44,155	857,412	72,091

(Table 6 continued on next page)

(Table 6 continued)

Forest Survey Unit and county [1]	Species group											
	Basswood	Beech	White birch	Yellow birch	Cotton-wood	Elm	Hickory	Hard maple	Soft maple	Red oak	White oak	Other hardwoods
Eastern Upper Peninsula												
Alger	2,287	3,369	2,733	3,443	--	1	--	24,148	24,753	502	5	2,234
Chippewa	751	339	4,161	857	--	--	--	7,657	10,825	380	--	593
Delta	1,010	1,139	5,423	1,590	--	1	--	13,086	11,576	188	7	1,133
Luce	1,032	1,413	1,250	1,687	--	--	--	12,166	12,502	235	--	1,112
Mackinac	725	971	4,658	1,181	--	--	--	9,975	10,654	142	--	826
Menominee	1,277	1,011	3,332	1,303	--	4	--	9,861	9,510	201	21	871
Schoolcraft	898	1,304	3,784	1,749	--	3	--	13,882	12,631	239	21	1,211
Total	7,979	9,545	25,340	11,809	--	9	--	90,775	92,452	1,887	55	7,980
Western Upper Peninsula												
Baraga	4,223	2,150	4,839	3,345	--	16	--	26,851	22,267	686	110	1,877
Dickinson	2,286	826	3,242	1,260	2	201	9	8,104	8,202	447	70	686
Gogebic	3,898	2,577	3,883	4,533	6	112	56	25,429	24,355	2,322	407	2,006
Houghton	8,471	2,971	4,948	4,931	--	12	--	39,285	31,146	1,011	80	2,447
Iron	4,271	3,072	7,988	4,101	--	22	3	30,963	29,341	792	132	2,617
Keweenaw	1,976	1,542	2,433	1,934	--	3	--	13,594	13,379	340	19	1,135
Marquette	4,316	3,665	11,599	5,266	2	5	1	43,452	37,860	668	26	3,654
Ontonagon	9,092	2,558	2,153	4,436	6	21	6	33,296	26,269	1,163	102	1,876
Total	38,534	19,360	41,085	29,806	15	393	75	220,974	192,819	7,428	945	16,299
Northern Lower Peninsula												
Alcona	767	281	1,616	--	--	--	--	1,741	1,846	--	--	--
Alpena	123	237	1,779	--	--	--	--	1,049	1,723	238	1	--
Antrim	1,852	188	2,239	6	--	--	7	2,747	3,428	213	219	--
Arenac	180	220	403	--	--	--	--	928	2,125	--	--	--
Bay	--	--	100	--	--	--	--	--	497	--	--	--
Benzie	1,155	488	582	45	--	--	66	2,025	3,095	1,822	1,858	--
Charlevoix	1,995	120	56	2	19	--	5	2,392	611	137	141	--
Cheboygan	958	325	3,641	--	--	--	--	2,465	8,120	851	--	--
Clare	516	256	470	26	735	--	37	1,683	3,983	1,469	1,508	--
Crawford	245	114	388	--	--	--	--	1,300	2,239	1,736	39	--
Emmet	434	197	1,610	--	--	--	--	1,550	4,566	161	19	--
Gladwin	706	443	1,532	16	499	--	22	1,153	5,056	1,450	1,652	--
Grand Traverse	620	152	268	15	--	--	22	815	2,341	786	625	--
Iosco	1,306	47	721	2	13	--	--	212	2,414	95	1	--
Isabella	302	480	502	4	475	148	6	1,278	4,527	292	182	--
Kalkaska	981	303	1,533	18	--	--	28	2,441	6,483	863	866	--
Lake	1,481	539	737	45	833	--	66	3,073	4,389	3,057	3,924	--
Leelanau	64	14	13	1	--	--	2	281	244	55	55	--
Manistee	1,009	820	486	44	--	--	67	2,744	5,079	2,290	2,428	--
Mason	385	407	193	16	--	--	24	1,319	2,076	773	805	--
Mecosta	82	548	137	101	--	--	2	1,043	3,604	683	736	--
Midland	562	257	619	28	--	--	40	1,309	3,845	1,277	1,330	--
Missaukee	810	381	1,177	19	--	--	30	1,911	7,750	810	832	--
Montmorency	1,651	367	1,791	18	--	19	--	2,524	2,550	780	90	--

Newaygo	412	401	317	20	293	69	30	1,685	5,421	3,340	3,492	
Oceana	54	783	23	2	165	–	5	2,324	4,178	1,359	1,356	
Ogemaw	288	147	699	10	–	–	15	995	1,785	737	398	
Osceola	658	313	419	29	–	–	43	1,734	2,361	1,357	1,396	
Oscoda	4,967	273	1,716	25	–	–	–	1,860	2,437	1,601	–	
Otsego	1,222	605	2,208	–	–	–	–	4,395	7,728	96	–	
Presque Isle	203	181	2,708	1	–	–	–	1,065	2,911	1,496	3	
Roscommon	126	51	1,157	10	–	–	5	308	5,878	1,173	131	
Wexford	646	308	340	29	–	–	41	1,549	2,800	1,207	1,254	
Total	26,760	10,246	32,179	532	3,032	236	562	53,896	118,092	32,204	25,343	
Southern Lower Peninsula												
Allegan	–	–	–	–	71	–	31	–	3,654	3,119	3,382	
Barry	–	10	–	–	–	–	10	9	292	258	289	
Branch	–	–	–	–	–	–	–	–	541	457	494	
Calhoun	–	–	–	–	–	–	–	–	346	292	315	
Cass	–	–	–	–	–	–	–	–	761	642	694	
Gratiot	–	–	–	–	–	–	–	–	–	2	2	
Huron	–	–	–	–	–	–	–	–	–	–	–	
Ingham	–	5	–	–	5	2	4	–	4	–	–	
Ionia	9	–	–	–	3	–	1	–	–	–	–	
Jackson	–	–	–	–	–	–	–	–	–	–	–	
Kalamazoo	–	–	–	–	–	–	–	–	405	342	369	
Kent	78	179	–	–	387	–	111	505	1,856	1,278	1,482	
Montcalm	–	192	9	–	278	–	120	643	2,002	970	1,048	
Muskegon	17	777	7	1	714	112	412	737	5,059	3,187	3,597	
Oakland	–	–	–	–	–	–	–	–	–	144	–	
Ottawa	19	72	15	–	–	–	–	199	817	604	664	
Saginaw	1	–	19	–	–	–	–	60	133	–	–	
Sanilac	33	–	12	–	–	–	–	28	161	–	–	
Shiawassee	233	71	–	–	193	36	1,332	65	367	314	344	
St. Joseph	–	–	–	–	–	–	–	–	1,637	1,381	1,493	
Tuscola	28	–	–	–	–	–	–	–	–	–	–	
Van Buren	162	372	–	–	605	63	174	453	2,294	1,541	1,668	
Wayne	22	11	143	–	–	–	–	77	314	–	–	
Total	600	1,689	205	1	2,257	213	2,195	2,778	20,644	14,529	15,842	
State total	73,874	40,840	98,810	42,148	5,305	851	2,832	368,423	424,006	56,049	42,184	24,27

Includes only those counties that supplied pulpwood in 1998.

Table 7.--Pulpwood receipts by year, product form, and species group, Michigan, 1946-1998

(In thousand standard cords, unpeeled) [1]

Year	Roundwood									Residue	
	Total	Pine	Balsam fir	Hemlock	Spruce	Cedar & tamarack	Aspen	Birch	Other hardwoods	Soft-woods	Hard-woods
1946	416	85	38	81	133	2	69	*	8	–	–
1947	444	141	60	64	118	1	50	1	9	–	–
1948	485	132	76	46	132	1	78	–	19	–	1
1949	258	53	45	7	88	–	40	*	25	–	–
1950	383	66	60	40	101	–	87	1	28	–	–
1951	582	134	81	100	108	–	126	*	33	–	–
1952	449	80	68	60	116	–	102	1	22	–	–
1953	451	75	54	45	102	–	142	–	33	–	–
1954	412	37	53	*	97	–	198	–	27	–	–
1955	455	20	53	2	102	–	240	–	38	–	–
1956	535	31	61	*	92	–	323	–	28	–	–
1957	533	48	83	2	90	–	264	1	45	–	–
1958	549	107	70	*	73	–	234	–	65	–	–
1959	699	116	70	1	94	–	336	–	81	–	1
1960	810	128	85	2	94	–	431	5	65	–	–
1961	700	109	68	*	75	–	351	6	91	–	–
1962	679	97	35	–	29	–	387	14	117	–	–
1963	742	84	49	–	78	–	399	9	123	–	–
1964	791	107	40	*	68	*	429	18	127	–	2
1965	825	114	35	4	71	–	436	29	118	–	18
1966	1,004	143	44	5	78	–	526	8	159	–	41
1967	774	117	46	2	81	–	323	6	161	–	38
1968	774	133	35	3	61	–	328	11	147	–	56
1969	771	116	19	2	16	–	358	22	152	–	86
1970	805	152	26	3	22	–	332	28	154	11	77
1971	700	115	19	2	17	*	298	22	165	1	61
1972	931	127	27	22	14	7	322	35	282	9	86
1973	1,199	135	37	36	14	4	404	64	351	12	142
1974	1,324	156	33	29	12	6	482	77	369	9	151
1975	844	167	18	23	7	4	288	33	171	8	125
1976	1,115	213	21	56	11	5	327	53	258	17	154
1977	1,233	208	51	62	25	10	370	48	269	17	173
1978	1,332	218	54	51	20	8	423	71	311	21	155
1979 [2]	1,490	222	47	46	13	10	527	85	343	13	184

1980	1,493	202	51	52	28	12	525	73	393	11	146
1981	1,448	188	67	37	22	15	486	85	383	14	151
1982	1,387	216	69	52	44	19	493	73	305	11	105
1983	1,787	204	63	46	51	27	746	114	371	17	148
1984	2,000	234	46	46	37	22	833	103	494	14	171
1985	2,264	264	64	34	57	52	819	103	686	20	165
1986	2,630	268	80	40	71	55	811	272	822	54	157
1987	2,610	239	89	35	68	67	783	276	809	73	171
1988	2,925	231	108	33	61	35	947	323	936	63	188
1989	3,073	179	129	40	76	43	1,073	362	908	68	195
1990	2,913	230	79	43	13	12	1,068	304	879	76	209
1991	2,979	247	94	47	15	15	1,026	262	994	80	198
1992	2,801	288	69	35	14	12	957	244	920	81	181
1993	3,145	295	86	35	20	12	1,109	267	1,048	83	190
1994	3,254	245	79	67	18	15	1,084	271	1,204	93	178
1995	3,056	275	58	68	14	10	942	228	1,156	90	215
1996	3,105	320	46	75	21	15	923	304	1,111	91	199
1997	3,114	333	40	77	15	11	918	196	1,269	31	224
1998	3,040	282	52	72	24	10	895	150	1,210	97	248

[1] *128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.*

[2] *Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.*

** = Less than 500 cords.*

Rows and columns may not sum due to rounding.

Table 8.--Pulpwood receipts by year and area of origin, Michigan, 1946-1998

(In thousand standard cords, unpeeled) [1]

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	Canada
1946	416	259	–	12	–	145
1947	444	239	42	21	–	142
1948	485	271	–	22	1	191
1949	258	130	–	3	*	125
1950	383	258	–	3	–	122
1951	582	398	4	9	1	170
1952	449	290	5	1	2	151
1953	451	319	11	11	*	110
1954	412	309	*	4	*	99
1955	455	356	–	5	–	94
1956	535	437	–	7	–	91
1957	533	427	–	9	–	97
1958	549	458	–	7	–	84
1959	699	603	3	7	–	86
1960	810	727	*	*	–	83
1961	700	628	1	–	–	71
1962	679	677	1	1	–	–
1963	742	669	2	–	–	71
1964	791	730	2	–	–	59
1965	825	750	1	–	–	74
1966	1,004	902	3	*	2	97
1967	774	685	*	*	4	85
1968	774	702	4	*	7	61
1969	771	751	9	–	9	2
1970	805	784	10	*	10	1
1971	700	689	*	*	11	*
1972	931	917	3	*	11	–
1973	1,199	1,131	55	*	13	–
1974	1,324	1,290	25	*	9	–
1975	844	815	19	–	10	–
1976	1,115	1,081	24	–	7	3
1977	1,233	1,159	65	–	9	–
1978	1,332	1,248	70	–	10	4
1979 [2]	1,490	1,428	46	–	14	2

1980	1,493	1,443	35	–	12	3
1981	1,448	1,402	26	–	16	4
1982	1,387	1,340	28	–	16	3
1983	1,787	1,747	23	–	17	–
1984	2,000	1,934	45	–	18	3
1985	2,058	1,973	64	–	17	4
1986	2,631	2,429	177	*	16	9
1987	2,611	2,420	161	–	19	11
1988	2,855	2,597	233	2	22	1
1989	3,073	2,777	272	2	22	–
1990	2,913	2,645	243	1	21	3
1991	2,979	2,687	274	–	15	2
1992	2,801	2,532	253	–	16	–
1993	3,146	2,859	244	–	15	28
1994	3,254	2,915	241	11	15	72
1995	3,056	2,733	231	4	14	74
1996	3,105	2,815	218	–	13	59
1997	3,114	2,824	234	–	15	41
1998	3,042	2,773	204	–	15	50

[1] 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

[2] Includes logs, bolts, and wood residue used in manufacturing particleboard and waferboard after 1978.

* = Less than 500 cords.

Rows and columns may not sum due to rounding.

Table 9. -- Pulpwood receipts by product form, species group, and area of origin, Michigan, 1998

(In thousand standard cords, unpeeled) [1]

Product form, species group	Total receipts	Area of origin				
		Michigan	Minnesota	Wisconsin	Other U.S.[3]	Canada
Roundwood						
Softwoods						
N. white-cedar	6	5	–	*	–	*
Balsam fir	52	48	–	4	–	*
Hemlock	71	64	–	7	–	*
Jack pine	193	183	–	10	–	*
Red pine	87	79	–	7	–	*
White pine	3	3	–	*	–	*
Spruce	24	22	–	2	–	*
Tamarack	4	4	–	*	–	*
Total	440	408	–	31	–	1
Hardwoods						
Ash	42	40	–	2	–	*
Aspen	895	800	–	46	–	49
Balsam poplar	77	72	–	5	–	*
Basswood	78	72	–	6	–	*
Beech	44	41	–	4	–	*
White birch	106	90	–	16	–	*
Yellow birch	44	40	–	4	–	*
Cottonwood	5	5	–	–	–	–
Elm	*	*	–	–	–	–
Hard maple	390	358	–	32	–	*
Soft maple	449	417	–	31	–	*
Red oak	54	53	–	1	–	*
White oak	41	41	–	–	–	–
Other hardwoods	29	27	–	3	–	*
Total	2,254	2,056	–	150	–	49
All roundwood	2,695	2,464	–	181	–	50
Residues[2]						
Softwood	98	87	–	10	–	–
Hardwood	248	220	–	13	15	–
Total	346	307	–	23	15	–
Total all wood material	3,041	2,771	–	204	15	50

[1] 128 cubic feet consisting of 79 cubic feet of wood and 49 cubic feet of bark and air space.

[2] Chippable mill residues such as slabs, edgings, etc.
Roundwood chips are included in roundwood.

[3] Mostly Western States.

* = Less than 500 standard cords, unpeeled.

Rows and columns may not sum due to rounding.

Table 10.--Saw log production and receipts by species group, Michigan, 1996 and 1998

(In thousand board feet) [1]

Species group	Production			Receipts		
	1996	1998	Change	1996	1998	Change
Softwoods						
N. white-cedar	7,250	5,659	-1,591	7,387	5,784	-1,603
Balsam fir	1,516	7,243	5,727	1,510	7,987	6,477
Hemlock	588	4,076	3,488	332	3,814	3,482
Jack pine	15,332	53,060	37,728	9,853	50,382	40,529
Red pine	99,415	103,734	4,319	93,923	99,838	5,915
White pine	8,779	12,626	3,847	7,998	12,036	4,038
Redcedar	172	6	-166	172	6	-166
Spruce	2,260	18,965	16,705	1,710	21,131	19,421
Tamarack	8	97	89	4	93	89
Total	135,319	205,466	70,147	122,890	201,071	78,181
Hardwoods						
Ash	16,130	28,056	11,926	14,554	26,428	11,874
Aspen	79,074	103,473	24,399	73,344	97,488	24,144
Balsam poplar	1,879	633	-1,246	1,867	621	-1,246
Basswood	25,274	23,995	-1,279	21,846	20,832	-1,014
Beech	6,891	11,794	4,903	6,417	11,510	5,093
White birch	9,036	11,163	2,127	5,300	7,867	2,567
Yellow birch	7,358	11,604	4,246	4,578	9,927	5,349
Cottonwood	1,515	6,899	5,384	1,201	6,598	5,397
Elm	609	1,314	705	419	1,124	705
Hickory	1,947	3,048	1,101	1,506	2,627	1,121
Hard maple	115,947	134,359	18,412	42,279	135,792	93,513
Soft maple	45,062	70,804	25,742	112,798	68,725	-44,073
Red oak group	100,921	106,226	5,305	97,833	105,361	7,528
White oak group	15,101	19,264	4,163	13,290	17,486	4,196
Hackberry	36	36	0	--	--	0
Butternut	10	10	0	--	--	0
Yellow-poplar	1,168	1,486	318	168	481	313
Sycamore	240	240	0	--	--	0
Black cherry	9,039	16,348	7,309	8,348	15,875	7,527
Sassafras	31	67	36	--	35	35
Willow	73	--	-73	73	--	-73
Black walnut	1,115	1,026	-89	575	481	-94
Other hardwoods	203	95	-108	190	76	-114
Total	438,664	551,941	113,277	406,584	529,335	122,751
All species	573,983	757,408	183,425	529,474	730,406	200,932

[1] International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 11.--Saw log production by Forest Survey Unit, species group, and destination, Michigan, 1998

(In thousand board feet) [1]

ALL UNITS

Species group	Total	Destination					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	7,243	–	7,034	–	210	–	–
Redcedar	6	–	6	–	–	–	–
Tamarack	97	–	93	–	4	–	–
Spruce	18,965	–	18,209	–	756	–	–
Jack pine	53,060	–	47,582	–	1,957	–	3,521
Red pine	103,734	–	98,228	–	5,506	–	–
White pine	12,626	–	11,966	–	661	–	–
N. white-cedar	5,659	–	5,332	–	327	–	–
Hemlock	4,076	–	3,814	–	262	–	–
Total	205,466	–	192,263	–	9,682	–	3,521
Hardwoods							
Soft maple	70,804	1,356	67,042	–	2,383	15	8
Hard maple	134,359	1,328	126,220	–	6,775	29	7
White birch	11,163	–	6,307	–	3,114	–	1,742
Yellow birch	11,604	–	8,489	–	2,580	–	536
Hickory	3,048	452	2,597	–	–	–	–
Hackberry	36	36	–	–	–	–	–
Beech	11,794	428	11,321	–	30	7	8
Ash	28,056	1,152	26,208	–	654	43	–
Butternut	10	1	–	–	9	–	–
Black walnut	1,026	538	481	–	–	7	–
Yellow-poplar	1,486	991	481	–	–	14	–
Sycamore	240	233	–	–	–	7	–
Cottonwood	6,899	298	6,584	–	8	8	–
Balsam poplar	633	–	621	–	12	–	–
Aspen	103,473	3	96,718	–	6,752	–	–
Black cherry	16,348	578	15,555	–	209	7	–
Red oak group	106,226	3,726	99,802	–	1,755	100	843
White oak group	19,264	1,404	17,398	–	91	146	225
Black locust	6	6	–	–	–	–	–
Sassafras	67	31	35	–	–	–	–
Basswood	23,995	428	20,359	–	3,205	–	4
Elm	1,314	182	1,124	–	9	–	–
Other hardwoods	89	1	76	–	–	–	12
Total	551,941	13,170	507,416	–	27,585	383	3,386
All species	757,408	13,170	699,679	–	37,267	383	6,908

(Table 11 continued on next page)

(Table 11 continued)

EASTERN UPPER PENINSULA

Species group	Total	Destination					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	1,874	–	1,869	–	5	–	–
Tamarack	1	–	1	–	–	–	–
Spruce	4,247	–	4,027	–	221	–	–
Jack pine	15,455	–	15,382	–	73	–	–
Red pine	12,178	–	11,334	–	844	–	–
White pine	3,722	–	3,486	–	236	–	–
N. white-cedar	3,770	–	3,684	–	87	–	–
Hemlock	1,102	–	1,102	–	–	–	–
Total	42,350	–	40,885	–	1,465	–	–
Hardwoods							
Soft maple	7,708	–	7,518	–	188	–	2
Hard maple	16,738	–	16,500	–	236	–	3
White birch	4,101	–	1,295	–	1,256	–	1,550
Yellow birch	2,267	–	1,727	–	7	–	533
Beech	4,974	–	4,948	–	18	–	7
Ash	4,953	–	4,855	–	98	–	–
Butternut	1	–	–	–	1	–	–
Cottonwood	*	–	*	–	–	–	–
Balsam poplar	30	–	30	–	–	–	–
Aspen	8,171	–	7,467	–	705	–	–
Black cherry	793	–	778	–	15	–	–
Red oak group	1,394	–	1,015	–	379	–	–
White oak group	29	–	–	–	29	–	–
Basswood	1,175	–	1,022	–	153	–	*
Elm	5	–	5	–	–	–	–
Total	52,339	–	47,160	–	3,085	–	2,094
All species	94,689	–	88,045	–	4,550	–	2,094

(Table 11 continued on next page)

(Table 11 continued)

WESTERN UPPER PENINSULA

Species group	Total	Destination					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	5,286	–	5,082	–	204	–	–
Tamarack	24	–	20	–	4	–	–
Spruce	14,261	–	13,725	–	536	–	–
Jack pine	18,612	–	16,728	–	1,884	–	–
Red pine	9,747	–	5,085	–	4,662	–	–
White pine	3,352	–	2,928	–	424	–	–
N. white-cedar	1,343	–	1,103	–	241	–	–
Hemlock	2,405	–	2,143	–	262	–	–
Total	55,030	–	46,813	–	8,217	–	–
Hardwoods							
Soft maple	11,172	–	8,977	–	2,195	–	–
Hard maple	43,327	–	36,805	–	6,522	–	–
White birch	3,544	–	1,686	–	1,858	–	–
Yellow birch	8,659	–	6,087	–	2,572	–	–
Beech	616	–	604	–	12	–	–
Ash	1,707	–	1,156	–	551	–	–
Butternut	9	–	–	–	9	–	–
Balsam poplar	76	–	64	–	12	–	–
Aspen	15,770	–	9,727	–	6,042	–	–
Black cherry	1,055	–	861	–	194	–	–
Red oak group	4,516	–	3,196	–	1,321	–	–
White oak group	39	–	–	–	39	–	–
Basswood	7,052	–	4,021	–	3,031	–	–
Elm	27	–	22	–	5	–	–
Other hardwoods	–	–	–	–	–	–	–
Total	97,570	–	73,206	–	24,363	–	–
All species	152,600	–	120,019	–	32,580	–	–

(Table 11 continued on next page)

(Table 11 continued)

NORTHERN LOWER PENINSULA

Species group	Total	Destination					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	84	–	84	–	–	–	–
Tamarack	49	–	49	–	–	–	–
Spruce	432	–	432	–	–	–	–
Jack pine	18,927	–	15,405	–	–	–	3,521
Red pine	77,512	–	77,512	–	–	–	–
White pine	4,262	–	4,262	–	–	–	–
N. white-cedar	545	–	545	–	–	–	–
Hemlock	527	–	527	–	–	–	–
Total	102,337	–	98,815	–	–	–	3,521
Hardwoods							
Soft maple	35,146	–	35,140	–	–	–	7
Hard maple	61,729	–	61,725	–	–	–	4
White birch	3,014	–	2,821	–	–	–	193
Yellow birch	642	–	639	–	–	–	3
Hickory	189	–	189	–	–	–	–
Beech	4,101	–	4,100	–	–	–	1
Ash	13,878	–	13,878	–	–	–	–
Black walnut	2	–	2	–	–	–	–
Cottonwood	4,951	–	4,951	–	–	–	–
Balsam poplar	461	–	461	–	–	–	–
Aspen	75,683	–	75,683	–	–	–	–
Black cherry	4,028	–	4,028	–	–	–	–
Red oak group	66,417	–	65,676	–	–	–	741
White oak group	7,668	–	7,491	–	–	–	177
Basswood	12,743	–	12,740	–	–	–	4
Elm	257	–	257	–	–	–	–
Other hardwoods	79	–	76	–	–	–	3
Total	290,989	–	289,856	–	–	–	1,133
All species	393,326	–	388,671	–	–	–	4,655

(Table 11 continued on next page)

(Table 11 continued)

SOUTHERN LOWER PENINSULA

Species group	Total	Destination					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	*	–	*	–	–	–	–
Redcedar	6	–	6	–	–	–	–
Tamarack	23	–	23	–	–	–	–
Spruce	26	–	26	–	–	–	–
Jack pine	67	–	67	–	–	–	–
Red pine	4,296	–	4,296	–	–	–	–
White pine	1,290	–	1,290	–	–	–	–
Hemlock	42	–	42	–	–	–	–
Total	5,749	–	5,749	–	–	–	–
Hardwoods							
Soft maple	16,778	1,356	15,407	–	–	15	–
Hard maple	12,564	1,328	11,190	–	17	29	–
White birch	504	–	504	–	–	–	–
Yellow birch	36	–	36	–	–	–	–
Hickory	2,860	452	2,408	–	–	–	–
Hackberry	36	36	–	–	–	–	–
Beech	2,104	428	1,669	–	–	7	–
Ash	7,518	1,152	6,319	–	4	43	–
Butternut	1	1	–	–	–	–	–
Black walnut	1,024	538	479	–	–	7	–
Yellow-poplar	1,486	991	481	–	–	14	–
Sycamore	240	233	–	–	–	7	–
Cottonwood	1,947	298	1,633	–	8	8	–
Balsam poplar	66	–	66	–	–	–	–
Aspen	3,849	3	3,841	–	5	–	–
Black cherry	10,473	578	9,888	–	1	7	–
Red oak group	33,898	3,726	29,915	–	55	100	102
White oak group	11,528	1,404	9,907	–	23	146	48
Black locust	6	6	–	–	–	–	–
Sassafras	67	31	35	–	–	–	–
Basswood	3,025	428	2,576	–	21	–	–
Elm	1,024	182	839	–	3	–	–
Other hardwoods	10	1	–	–	–	–	9
Total	111,043	13,170	97,194	–	137	383	159
All species	116,792	13,170	102,943	–	137	383	159

**=Less than 500 board feet.*

[1] International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 12.--Saw log production by Forest Survey Unit, county, and species group, Michigan, 1998

(In thousand board feet) [1]

Forest Survey Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hem-lock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hack-berry
Eastern Upper Peninsula																
Alger	49	--	--	89	49	1,283	478	124	311	2,382	1,110	3,685	676	926	--	--
Chippewa	69	--	--	279	2,131	2,616	376	483	83	6,038	718	1,466	223	81	--	--
Delta	1,084	--	--	1,628	1,096	1,333	354	544	202	6,243	1,499	2,884	862	462	--	--
Luce	5	--	--	45	5,063	2,120	735	106	232	8,306	1,894	3,721	301	391	--	--
Mackinac	319	--	--	471	2,028	2,429	362	540	52	6,201	814	2,094	786	101	--	--
Menominee	49	--	1	112	11	304	647	1,762	94	2,980	596	1,249	687	131	--	--
Schoolcraft	298	--	--	1,623	5,077	2,093	769	211	128	10,200	1,077	1,638	565	175	--	--
Total	1,874	--	1	4,247	15,455	12,178	3,722	3,770	1,102	42,350	7,708	16,738	4,100	2,267	--	--
Western Upper Peninsula																
Baraga	59	--	--	2,837	2,645	1,197	515	270	952	8,474	2,480	10,327	286	1,938	--	--
Dickinson	1,066	--	--	2,108	1,658	791	692	240	13	6,567	449	2,683	592	205	--	--
Gogebic	669	--	4	1,883	259	1,294	80	128	161	4,477	1,210	5,792	23	715	--	--
Houghton	569	--	--	1,604	1,219	2,167	216	125	417	6,316	2,323	10,593	347	1,697	--	--
Iron	1,133	--	--	1,807	1,752	1,068	459	81	194	6,495	1,386	5,240	1,312	1,703	--	--
Keweenaw	31	--	4	105	--	36	230	118	12	537	886	1,313	65	545	--	--
Marquette	1,632	--	16	3,816	11,047	1,062	1,160	318	609	19,659	1,760	4,906	809	706	--	--
Ontonagon	129	--	--	102	33	2,132	--	63	48	2,505	679	2,473	110	1,149	--	--
Total	5,286	--	24	14,261	18,612	9,747	3,352	1,343	2,405	55,030	11,172	43,327	3,544	8,659	--	--
Northern Lower Peninsula																
Alcona	1	--	--	3	508	2,032	145	6	--	2,694	1,025	820	145	*	--	--
Alpena	3	--	5	17	54	376	70	54	--	578	1,218	367	248	--	--	--
Antrim	--	--	--	1	1	1,014	24	4	39	1,082	649	5,291	45	60	--	--
Arenac	--	--	--	--	21	22	16	1	--	59	811	31	25	*	1	--
Bay	--	--	--	--	--	--	--	--	--	--	181	1	29	--	--	--
Benzie	--	--	--	1	1	1,196	5	--	14	1,216	1,014	4,246	31	12	--	--
Charlevoix	--	--	--	--	--	1,444	13	9	18	1,484	408	4,569	353	136	--	--
Cheboygan	8	--	1	22	636	4,360	112	52	3	5,193	682	3,516	152	7	--	--
Clare	1	--	3	--	144	1,718	143	2	--	2,010	2,292	438	59	6	9	--
Crawford	1	--	--	1	4,438	3,353	47	--	--	7,840	426	521	35	--	--	--
Emmet	2	--	--	2	--	1,376	11	10	13	1,412	646	6,082	174	27	--	--
Gladwin	--	--	--	--	30	274	95	76	1	477	1,389	87	108	14	2	--
Grand Traverse	--	--	17	--	136	4,287	96	--	40	4,576	1,174	3,076	53	6	8	--
Iosco	3	--	--	1	421	3,240	540	81	2	4,288	1,142	707	103	*	1	--
Isabella	--	--	--	1	--	384	40	1	16	442	871	855	55	15	1	--
Kalkaska	1	--	--	9	334	6,830	58	*	15	7,247	704	3,084	72	25	2	--
Lake	--	--	1	--	1,176	2,129	282	--	15	3,603	819	215	9	3	--	--
Leelanau	--	--	3	1	--	1,442	62	17	15	1,540	110	2,480	27	22	--	--
Manistee	--	--	6	--	56	2,193	141	--	22	2,418	2,288	4,274	50	26	--	--
Mason	--	--	--	--	62	1,617	107	--	10	1,796	1,161	1,616	28	7	41	--
Mecosta	--	--	1	19	39	1,088	500	2	79	1,730	1,030	1,405	106	24	11	--
Midland	--	--	--	--	--	72	62	--	22	156	2,036	76	129	4	22	--
Missaukee	1	--	1	3	902	1,895	57	2	--	2,861	995	1,150	79	6	--	--
Montmorency	1	--	--	5	1,008	1,584	148	10	--	2,755	1,775	1,556	176	79	--	--
Newaygo	--	--	3	--	195	3,983	668	--	46	4,894	3,300	1,548	10	13	85	--

Northern Lower Peninsula (continued on next page)

(Table 12 continued on next page)

(Table 12 continued)

Forest Survey Unit and county	Balsam fir	Red-cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	Yellow birch	Hickory	Hackberry
Northern Lower Peninsula (continued)																
Oceana	--	--	1	4	426	5,880	47	--	36	6,393	927	1,027	19	19	--	--
Ogemaw	1	--	--	1	962	860	13	9	--	1,846	884	705	90	78	--	--
Osceola	--	--	1	1	6	892	33	6	54	993	1,294	2,683	85	12	5	--
Oscoda	1	--	--	1	3,169	2,893	260	2	--	6,325	899	735	147	*	--	--
Otsego	1	--	--	2	1,052	5,171	79	7	--	6,311	430	3,924	88	10	--	--
Presque Isle	11	--	--	67	244	1,036	90	186	--	1,633	851	918	154	1	--	--
Roscommon	1	--	--	13	1,903	1,637	19	9	--	3,582	915	48	106	1	--	--
Wexford	50	--	6	260	1,004	11,235	280	--	68	12,903	799	3,676	26	29	--	--
Total	84	--	49	432	18,927	77,512	4,262	545	527	102,337	35,146	61,729	3,014	642	189	--
Southern Lower Peninsula																
Allegan	--	--	--	--	18	274	66	--	4	362	1,004	266	124	7	198	4
Barry	--	--	1	14	7	408	--	--	--	430	870	1,520	51	1	205	6
Berrien	--	--	--	--	--	17	1	--	--	18	208	669	--	--	53	5
Branch	--	--	--	--	--	--	--	--	--	--	594	575	3	--	33	--
Calhoun	--	--	--	--	--	1	--	--	--	1	554	146	2	1	257	3
Cass	--	--	--	--	--	--	--	--	--	--	1,293	366	--	6	90	5
Clinton	--	--	--	--	5	475	--	--	--	480	770	224	6	--	59	--
Eaton	--	--	--	--	--	70	--	--	--	70	266	1,009	2	--	116	--
Genesee	--	--	--	--	--	--	1	--	--	1	154	236	*	--	19	--
Gratiot	--	--	--	--	--	14	73	--	--	87	623	68	3	--	--	--
Hillsdale	--	--	--	--	--	--	3	--	--	3	77	650	1	--	19	--
Huron	--	--	--	--	--	--	--	--	--	--	265	90	5	--	6	--
Ingham	--	--	--	--	--	--	--	--	--	--	181	208	2	--	23	--
Ionia	--	--	10	7	--	--	5	--	--	21	132	379	19	--	133	--
Jackson	--	--	--	--	--	--	--	--	--	--	163	--	2	--	273	4
Kalamazoo	--	--	--	*	--	59	61	--	--	120	416	127	3	--	66	2
Kent	--	--	1	--	--	448	24	--	--	473	1,589	1,446	48	3	83	2
Lapeer	--	--	--	--	4	10	--	--	--	14	374	320	7	--	37	--
Lenawee	--	--	--	--	--	--	--	--	--	--	74	834	--	--	190	--
Livingston	--	--	--	--	--	1	--	--	--	1	271	12	3	--	94	--
Macomb	--	2	--	--	--	10	--	--	--	12	136	137	--	1	26	--
Monroe	--	--	--	--	--	--	--	--	--	--	101	161	--	--	114	--
Montcalm	--	--	11	--	1	390	232	--	7	642	1,138	244	42	4	12	--
Muskegon	--	4	--	3	28	1,220	174	--	18	1,447	1,204	79	68	1	4	--
Oakland	--	--	--	2	--	11	56	--	--	69	305	341	--	--	120	--
Ottawa	--	--	--	--	4	434	530	--	12	981	600	195	36	11	7	--
Saginaw	--	--	--	--	--	--	1	--	--	1	512	221	10	--	52	--
Sanilac	--	--	--	--	--	--	--	--	--	--	151	83	7	--	4	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	220	230	1	--	32	--
St. Clair	--	--	--	--	--	10	4	--	--	14	387	336	*	--	37	--
St. Joseph	--	--	--	--	--	125	1	--	--	126	190	119	--	--	179	2
Tuscola	--	--	--	--	--	--	--	--	--	--	282	173	55	--	10	--
Van Buren	*	--	--	*	--	311	56	--	--	367	1,468	1,066	--	--	107	4
Washtenaw	--	--	--	--	--	--	--	--	--	--	127	14	4	--	179	--
Wayne	--	--	--	--	--	10	--	--	--	10	78	23	--	--	21	--
Total	*	6	23	26	67	4,296	1,290	--	42	5,749	16,778	12,564	504	36	2,860	36
State total	7,243	6	97	18,965	53,060	103,734	12,626	5,659	4,076	205,466	70,804	134,359	11,163	11,604	3,048	36

(Table 12 continued on next page)

(Table 12 continued)

Forest Survey Unit and county	Beech	Ash	Butternut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Eastern Upper Peninsula																		
Alger	1,859	140	*	--	--	--	--	--	240	213	205	10	--	120	--	--	9,184	11,566
Chippewa	174	116	--	--	--	--	*	1	1,107	70	40	*	--	16	*	--	4,013	10,051
Delta	643	245	*	--	--	--	--	1	2,613	205	244	16	--	519	--	--	10,194	16,436
Luce	1,673	3,705	*	--	--	--	--	--	322	115	112	--	--	25	--	--	12,259	20,565
Mackinac	174	124	*	--	--	--	--	1	1,043	58	232	--	--	158	--	--	5,586	11,787
Menominee	51	534	--	--	--	--	--	27	2,629	16	558	4	--	304	5	--	6,790	9,770
Schoolcraft	399	89	*	--	--	--	--	--	217	116	3	--	--	33	--	--	4,313	14,514
Total	4,974	4,953	1	--	--	--	*	29	8,171	793	1,394	30	--	1,175	5	--	52,339	94,689
Western Upper Peninsula																		
Baraga	6	279	4	--	--	--	--	--	2,033	98	627	12	--	991	1	--	19,081	27,556
Dickinson	1	163	--	--	--	--	--	47	2,242	13	376	--	--	1,740	9	--	8,520	15,087
Gogebic	--	516	*	--	--	--	--	--	3,493	255	25	--	--	1,024	1	--	13,054	17,532
Houghton	--	189	*	--	--	--	--	--	1,000	78	675	--	--	475	1	--	17,380	23,695
Iron	16	200	4	--	--	--	--	15	2,877	329	1,204	12	--	1,473	10	--	15,781	22,276
Keweenaw	--	25	--	--	--	--	--	--	69	23	499	--	--	25	--	--	3,449	3,986
Marquette	590	135	*	--	--	--	--	15	3,503	124	995	15	--	399	5	--	13,962	33,621
Ontonagon	3	201	--	--	--	--	--	--	552	135	115	--	--	925	1	--	6,342	8,848
Total	616	1,707	9	--	--	--	--	76	15,770	1,055	4,516	39	--	7,052	27	--	97,570	152,600
Northern Lower Peninsula																		
Alcona	120	3,339	--	--	--	--	--	44	9,400	41	6,978	280	--	385	32	--	22,608	25,302
Alpena	27	285	--	--	--	--	--	41	3,977	1	1,225	33	--	192	2	--	7,617	8,194
Antrim	315	344	--	--	--	--	2	7	1,396	78	112	--	--	2,249	22	--	10,570	11,652
Arenac	2	279	--	--	--	--	109	5	1,388	3	253	17	--	18	*	--	2,942	3,001
Bay	--	102	--	--	--	--	53	--	260	12	16	41	--	8	1	--	706	706
Benzie	202	178	--	--	--	--	--	--	282	96	1,312	--	--	402	*	--	7,776	8,992
Charlevoix	212	436	--	--	--	--	--	7	742	34	93	--	--	1,398	7	--	8,396	9,880
Cheboygan	83	218	--	--	--	--	--	11	2,341	52	543	112	--	1,234	2	--	8,953	14,146
Clare	104	214	--	--	--	--	68	15	7,296	204	3,701	436	--	42	11	--	14,896	16,906
Crawford	55	75	--	--	--	--	--	4	682	15	1,740	143	--	139	15	--	3,850	11,689
Emmet	490	395	--	--	--	--	--	42	1,710	133	211	--	--	771	8	--	10,689	12,100
Gladwin	--	310	--	--	--	--	101	60	4,950	9	1,034	237	--	46	10	--	8,357	8,834
Grand Traverse	123	132	--	--	--	--	5	10	630	65	1,915	223	--	338	2	--	7,762	12,337
Iosco	*	354	--	--	--	--	4,133	43	5,526	12	1,039	91	--	44	3	--	13,198	17,486
Isabella	23	255	--	--	--	--	159	20	1,414	36	949	159	--	58	10	--	4,881	5,323
Kalkaska	133	77	--	*	--	--	--	1	565	71	585	23	--	647	4	*	5,993	13,240
Lake	38	195	--	--	--	--	10	--	1,322	163	5,278	1,010	--	104	7	--	9,173	12,776
Leelanau	240	649	--	--	--	--	--	3	141	10	88	3	--	336	8	--	4,119	5,659
Manistee	321	251	--	--	--	--	2	--	586	408	3,596	569	--	247	3	--	12,619	15,037
Mason	46	124	--	--	--	--	--	--	1,053	244	4,046	537	--	62	5	--	8,970	10,766
Mecosta	52	579	--	--	--	--	33	--	2,010	251	1,422	202	--	171	31	--	7,329	9,059
Midland	37	273	--	--	--	--	146	9	1,852	37	851	611	--	140	3	--	6,226	6,382
Missaukee	72	254	--	--	--	--	*	2	1,483	88	1,476	177	--	124	6	--	5,913	8,773
Montmorency	75	302	--	--	--	--	--	9	4,734	25	3,192	114	--	756	2	--	12,795	15,550
Newaygo	206	559	--	1	--	--	30	13	1,215	708	7,957	1,686	--	284	19	54	17,690	22,584

Northern Lower Peninsula (continued on next page)

(Table 12 continued on next page)

(Table 12 continued)

Forest Survey Unit and county	Beech	Ash	Butternut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
Northern Lower Peninsula (continued)																		
Oceana	124	284	--	--	--	--	56	18	501	339	2,655	368	--	103	11	18	6,468	12,861
Ogemaw	28	1,730	--	--	--	--	--	1	7,949	4	3,660	32	--	113	1	--	15,275	17,121
Osceola	409	513	--	--	--	--	11	12	2,510	266	2,755	81	--	315	9	7	10,969	11,962
Oscoda	91	164	--	--	--	--	--	4	2,044	56	3,045	115	--	355	1	--	7,655	13,980
Otsego	169	86	--	--	--	--	--	10	755	15	408	15	--	853	6	--	6,769	13,080
Presque Isle	36	222	--	--	--	--	--	57	2,508	*	920	21	--	280	1	--	5,970	7,603
Roscommon	5	382	--	--	--	--	32	12	2,025	13	2,542	304	--	50	--	--	6,435	10,017
Wexford	263	319	--	--	--	--	--	4	434	537	818	25	--	478	14	1	7,424	20,327
Total	4,101	13,878	--	2	--	--	4,951	461	75,683	4,028	66,417	7,668	--	12,743	257	79	290,989	393,326
Southern Lower Peninsula																		
Allegan	165	508	*	50	836	--	7	--	178	562	3,248	1,468	8	132	65	2	8,834	9,196
Barry	144	242	*	71	39	--	14	--	59	890	3,027	420	8	221	75	3	7,867	8,296
Berrien	59	92	*	38	350	240	23	1	3	626	416	273	11	73	47	2	3,188	3,206
Branch	4	201	--	16	14	--	4	--	8	183	325	134	--	37	11	--	2,142	2,142
Calhoun	58	459	*	32	41	--	243	--	314	784	556	451	4	348	101	2	4,356	4,358
Cass	20	116	*	108	46	--	1	--	3	1,201	1,489	278	4	50	61	3	5,138	5,138
Clinton	--	56	--	14	--	--	1	--	187	246	164	56	--	50	17	--	1,850	2,330
Eaton	70	446	--	51	3	--	15	--	2	223	277	214	2	242	89	--	3,028	3,098
Genesee	34	167	--	6	--	--	33	--	13	32	363	104	--	94	28	--	1,283	1,284
Gratiot	--	256	--	--	--	--	193	--	213	6	720	172	--	147	22	--	2,422	2,508
Hillsdale	--	99	--	30	--	--	*	--	1	137	132	57	--	55	6	--	1,264	1,267
Huron	7	224	--	--	--	--	310	57	104	21	42	28	--	29	6	--	1,192	1,192
Ingham	16	155	--	--	--	--	12	--	5	67	90	36	--	56	18	--	869	869
Ionia	258	187	--	9	--	--	56	--	284	433	668	62	--	218	38	--	2,874	2,896
Jackson	--	170	*	101	--	--	3	--	7	573	1,300	762	6	100	14	2	3,481	3,481
Kalamazoo	14	100	*	13	59	--	2	--	15	427	459	203	4	7	32	*	1,950	2,070
Kent	53	442	*	17	--	--	--	--	306	493	2,990	669	2	145	38	*	8,327	8,800
Lapeer	27	202	--	--	--	--	51	3	100	67	525	259	--	47	32	--	2,049	2,063
Lenawee	79	56	--	27	1	--	4	--	1	310	228	158	1	224	3	--	2,193	2,193
Livingston	--	126	--	--	--	--	6	--	5	427	1,069	497	--	10	18	--	2,538	2,539
Macomb	40	72	--	--	1	--	6	--	--	50	247	108	--	31	7	--	863	875
Monroe	20	153	--	34	--	--	12	--	78	48	253	148	--	37	--	--	1,158	1,158
Montcalm	82	565	--	*	--	--	95	--	371	117	2,530	817	3	62	65	--	6,148	6,790
Muskegon	353	167	--	1	--	--	--	--	189	190	5,229	951	--	5	14	--	8,458	9,904
Oakland	50	197	--	2	--	--	29	1	3	240	901	313	--	74	40	--	2,615	2,684
Ottawa	300	227	--	--	14	--	88	--	131	122	1,373	382	--	42	20	--	3,548	4,529
Saginaw	8	351	--	--	--	--	203	--	150	23	663	486	--	43	33	--	2,755	2,756
Sanilac	18	147	--	--	--	--	66	3	9	26	17	--	--	47	8	--	585	585
Shiawassee	17	290	--	7	--	--	23	--	3	103	269	66	--	73	6	--	1,342	1,342
St Clair	91	300	--	--	--	--	247	--	41	95	559	292	--	73	19	--	2,479	2,493
St Joseph	--	168	*	244	44	--	--	--	7	332	796	146	3	33	11	*	2,275	2,401
Tuscola	7	325	--	--	--	--	179	--	1,043	63	150	93	--	77	29	--	2,487	2,487
Van Buren	93	150	*	11	36	--	--	--	6	1,159	1,990	245	6	45	32	2	6,421	6,788
Washtenaw	--	61	--	142	--	--	7	1	5	184	595	1,041	3	17	6	--	2,386	2,386
Wayne	18	40	--	--	1	--	13	--	1	13	234	141	--	82	13	--	678	688
Total	2,104	7,518	1	1,024	1,486	240	1,947	66	3,849	10,473	33,898	11,528	67	3,025	1,024	16	111,043	116,792
State total	11,974	28,056	10	1,026	1,486	240	6,899	633	103,473	16,348	106,226	19,264	67	23,995	1,314	95	551,941	757,408

[1] International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 13.--Saw log receipts by Forest Survey Unit, species group, and State of origin, Michigan, 1998

(In thousand board feet) [1]

	ALL UNITS						
Species group	**Total**	**Indiana**	**Michigan**	**Minnesota**	**Wisconsin**	**Ohio**	**Canada**
Softwoods							
Balsam fir	7,987	–	7,034	15	938	–	–
Redcedar	6	–	6	–	–	–	–
Tamarack	93	–	93	–	–	–	–
Spruce	21,131	–	18,209	20	2,902	–	–
Jack pine	50,382	–	47,582	–	2,800	–	–
Red pine	99,838	–	98,228	–	1,610	–	–
White pine	12,036	–	11,966	–	69	–	2
N. white-cedar	5,784	–	5,332	–	453	–	–
Hemlock	3,814	–	3,814	–	–	–	–
Total	201,071		192,263	35	8,771	–	2
Hardwoods							
Soft maple	68,725	81	67,042	–	882	81	638
Hard maple	135,792	109	126,220	–	2,887	81	6,495
White birch	7,867	–	6,307	–	1,079	–	481
Yellow birch	9,927	–	8,489	–	140	–	1,298
Hickory	2,627	15	2,597	–	–	15	–
Beech	11,510	–	11,321	–	19	–	170
Ash	26,428	95	26,208	–	73	12	39
Black walnut	481	–	481	–	–	–	–
Yellow-poplar	481	–	481	–	–	–	–
Cottonwood	6,598	–	6,584	–	–	14	–
Balsam poplar	621	–	621	–	–	–	–
Aspen	97,488	–	96,718	–	770	–	–
Black cherry	15,875	66	15,555	–	86	66	102
Red oak group	105,361	150	99,802	–	3,726	141	1,542
White oak group	17,486	50	17,398	–	–	38	–
Sassafras	35	–	35	–	–	–	–
Basswood	20,832	15	20,359	–	263	15	180
Elm	1,124	–	1,124	–	–	–	–
Other hardwoods	76	–	76	–	–	–	–
Total	529,335	582	507,416	–	9,927	464	10,945
All species	730,406	582	699,679	35	18,698	464	10,948

(Table 13 continued on next page)

(Table 13 continued)

EASTERN UPPER PENINSULA

Species group	Total	Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	1,153	–	950	15	188	–	–
Tamarack	1	–	1	–	–	–	–
Spruce	1,927	–	1,705	20	202	–	–
Jack pine	544	–	544	–	–	–	–
Red pine	6,690	–	6,580	–	110	–	–
White pine	5,549	–	5,478	–	69	–	2
N. white-cedar	4,811	–	4,358	–	453	–	–
Hemlock	2,710	–	2,710	–	–	–	–
Total	23,384	–	22,326	35	1,021	–	2
Hardwoods							
Soft maple	7,900	–	7,334	–	350	–	216
Hard maple	26,424	–	19,910	–	2,193	–	4,320
White birch	1,430	–	1,224	–	141	–	65
Yellow birch	2,506	–	2,074	–	108	–	324
Beech	5,489	–	5,361	–	19	–	108
Ash	4,919	–	4,819	–	73	–	27
Balsam poplar	7	–	7	–	–	–	–
Aspen	9,074	–	8,876	–	199	–	–
Black cherry	984	–	844	–	86	–	54
Red oak group	1,715	–	1,159	–	394	–	162
Basswood	1,304	–	1,186	–	117	–	–
Total	61,751	–	52,793	–	3,682	–	5,276
All species	85,135	–	75,119	35	4,703	–	5,278

(Table 13 continued on next page)

(Table 13 continued)

Species group	Total	WESTERN UPPER PENINSULA					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	6,750	–	6,000	–	750	–	–
Tamarack	20	–	20	–	–	–	–
Spruce	18,721	–	16,021	–	2,700	–	–
Jack pine	40,366	–	37,566	–	2,800	–	–
Red pine	13,639	–	12,139	–	1,500	–	–
White pine	925	–	925	–	–	–	–
N. white-cedar	317	–	317	–	–	–	–
Hemlock	535	–	535	–	–	–	–
Total	81,273	–	73,523	–	7,750	–	–
Hardwoods							
Soft maple	9,587	–	8,633	–	532	–	422
Hard maple	35,508	–	32,640	–	694	–	2,175
White birch	2,994	–	1,639	–	938	–	417
Yellow birch	6,747	–	5,740	–	32	–	974
Beech	100	–	38	–	–	–	62
Ash	1,167	–	1,155	–	–	–	12
Aspen	87	–	87	–	–	–	–
Black cherry	8,366	–	7,795	–	571	–	–
Red oak group	813	–	765	–	–	–	48
White oak group	7,719	–	3,007	–	3,332	–	1,380
Basswood	4,169	–	3,843	–	146	–	180
Elm	27	–	27	–	–	–	–
Total	77,283	–	65,368	–	6,245	–	5,670
All species	158,556	–	138,891	–	13,995	–	5,670

(Table 13 continued on next page)

(Table 13 continued)

Species group	Total	NORTHERN LOWER PENINSULA					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	84	–	84	–	–	–	–
Redcedar	2	–	2	–	–	–	–
Tamarack	72	–	72	–	–	–	–
Spruce	480	–	480	–	–	–	–
Jack pine	9,465	–	9,465	–	–	–	–
Red pine	79,221	–	79,221	–	–	–	–
White pine	4,723	–	4,723	–	–	–	–
N. white-cedar	657	–	657	–	–	–	–
Hemlock	569	–	569	–	–	–	–
Total	95,273	–	95,273	–	–	–	–
Hardwoods							
Soft maple	34,702	–	34,702	–	–	–	–
Hard maple	59,060	–	59,060	–	–	–	–
White birch	3,191	–	3,191	–	–	–	–
Yellow birch	660	–	660	–	–	–	–
Hickory	496	–	496	–	–	–	–
Beech	4,484	–	4,484	–	–	–	–
Ash	14,647	–	14,647	–	–	–	–
Cottonwood	5,312	–	5,312	–	–	–	–
Balsam poplar	458	–	458	–	–	–	–
Aspen	76,104	–	76,104	–	–	–	–
Black cherry	3,923	–	3,923	–	–	–	–
Red oak group	64,905	–	64,905	–	–	–	–
White oak group	7,874	–	7,874	–	–	–	–
Sassafras	25	–	25	–	–	–	–
Basswood	12,569	–	12,569	–	–	–	–
Elm	485	–	485	–	–	–	–
Other hardwoods	76	–	76	–	–	–	–
Total	288,970	–	288,970	–	–	–	–
All species	384,243	–	384,243	–	–	–	–

(Table 13 continued on next page)

(Table 13 continued)

Species group	Total	SOUTHERN LOWER PENINSULA					
		Indiana	Michigan	Minnesota	Wisconsin	Ohio	Canada
Softwoods							
Balsam fir	*	–	*	–	–	–	–
Redcedar	4	–	4	–	–	–	–
Spruce	4	–	4	–	–	–	–
Jack pine	7	–	7	–	–	–	–
Red pine	287	–	287	–	–	–	–
White pine	839	–	839	–	–	–	–
N. white-cedar	*	–	*	–	–	–	–
Total	1,141	–	1,141	–	–	–	–
Hardwoods							
Soft maple	16,536	81	16,374	–	–	81	–
Hard maple	14,801	109	14,610	–	–	81	–
White birch	253	–	253	–	–	–	–
Yellow birch	15	–	15	–	–	–	–
Hickory	2,131	15	2,101	–	–	15	–
Beech	1,437	–	1,437	–	–	–	–
Ash	5,695	95	5,588	–	–	12	–
Black walnut	481	–	481	–	–	–	–
Yellow-poplar	481	–	481	–	–	–	–
Cottonwood	1,286	–	1,272	–	–	14	–
Balsam poplar	69	–	69	–	–	–	–
Aspen	3,944	–	3,944	–	–	–	–
Black cherry	10,155	66	10,022	–	–	66	–
Red oak group	31,023	150	30,732	–	–	141	–
White oak group	9,611	50	9,524	–	–	38	–
Sassafras	11	–	11	–	–	–	–
Basswood	2,790	15	2,760	–	–	15	–
Elm	612	–	612	–	–	–	–
Other hardwoods	*	–	*	–	–	–	–
Total	101,332	582	100,285	–	–	464	–
All species	102,473	582	101,426	–	–	464	–

[1] International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 14.--Veneer log and bolt production and receipts in Michigan for selected years, 1946-1998

(In thousand board feet) [1]

Year	Production	Receipts
1946	78,858	46,055
1948	77,684	53,899
1950	53,568	37,404
1952	40,219	28,547
1954	34,499	21,872
1956	39,655	23,564
1958	19,958	12,597
1960	18,487	12,075
1963	15,300	7,598
1965	20,392	12,428
1966	21,942	12,782
1968	19,333	9,573
1969	19,194	14,970
1970	15,039	6,729
1972	18,479	5,324
1974 [2]	25,949	25,322
1975	26,079	26,851
1976	33,373	28,764
1977	42,738	30,838
1978	35,030	39,179
1980	36,761	27,287
1984	31,753	13,737
1988	36,201	39,220
1990	37,836	41,736
1992	38,195	40,251
1994	49,096	44,485
1996	60,550	54,673
1998	40,987	36,718

[1] International 1/4-inch rule.

[2] Includes veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Table 15.--Veneer log and bolt production and receipts by species group, Michigan, 1996 and 1998

(In thousand board feet) [1]

Species group	Production			Receipts		
	1996	1998	Change	1996	1998	Change
Softwoods						
Jack pine	260	–	-260	260	140	-120
Red pine	1,042	1,354	312	1,042	1,904	862
White pine	741	450	-291	520	644	124
Hemlock	–	–	–	–	–	–
Spruce	1,042	850	-192	1,042	1,600	558
Tamarack	–	–	–	–	–	–
Total	3,084	2,653	-431	2,864	4,287	1,423
Hardwoods						
Ash	948	378	-570	570	–	-570
Aspen	23,293	12,018	-11,275	23,177	22,402	-775
Basswood	696	762	66	--	66	66
Beech	551	161	-390	466	75	-391
White birch	2,611	2,668	57	842	667	-175
Yellow birch	949	826	-123	197	74	-123
River birch	–	67	67			
Cottonwood	821	308	-513	8,208	342	-7,866
Elm	17	17	0	–	–	–
Hickory	68	140	72	62	51	-11
Hard maple	20,280	13,694	-6,586	13,779	5,200	-8,579
Soft maple	1,107	710	-397	1,323	105	-1,218
Red oak group	3,835	4,105	270	2,036	2,013	-23
White oak group	853	923	70	522	619	97
Black walnut	371	373	2	39	57	18
Yellow-poplar	7	3	-4	–	–	–
Sycamore	–	–	–	–	–	–
Balsam poplar	–	–	–	–	–	–
Black cherry	991	1,181	190	591	760	169
Other hardwood	67	–	-67	–	–	–
Total	57,465	38,335	-19,130	51,810	32,431	-19,379
All species	60,550	40,987	-19,563	54,673	36,718	-17,955

[1] International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 16.--Veneer log and bolt production by Forest Survey Unit, species group, and destination, Michigan, 1998

(In thousand board feet) [1]

Species group	ALL UNITS								
	Total	Illinois	Indiana	Michigan	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
Softwoods									
Spruce	850	–	–	850	–	–	–	–	–
Red pine	1,354	–	–	1,354	–	–	–	–	–
White pine	450	–	–	229	47	–	–	–	174
Total	2,653	–	–	2,432	47	–	–	–	174
Hardwoods									
Soft maple	710	–	–	105	605		–	–	–
Hard maple	13,694	57	2,261	2,823	6,275	–	1,509	88	682
White birch	2,668	–	–	591	2,078	–	–	–	–
River birch	67	–	67	–	–	–	–	–	–
Yellow birch	826	–	–	74	752	–	–	–	–
Hickory	140	–	3	51	–	82	–	–	3
Beech	161	–	–	75	12	–	–	–	73
Ash	378	–	24	–	121	–	53	87	93
Black walnut	373	–	169	7	–	48	42	88	19
Yellow-poplar	3	–	3	–	–	–	–	–	–
Cottonwood	308	–	–	308	–	–	–	–	–
Aspen	12,018	–	–	11,902	116	–	–	–	–
Black cherry	1,181	219	426	467	25	21	11	–	11
Red oak group	4,105	–	498	811	1,747	410	581	1	57
White oak group	923	57	236	190	12	–	102	1	325
Basswood	762	–	–	66	684	–	–	–	12
Elm	17	–	–	–	–	–	–	–	17
Total	38,335	333	3,687	17,470	12,429	561	2,298	264	1,293
All species	40,987	333	3,687	19,902	12,475	561	2,298	264	1,467

(Table 16 continued on next page)

(Table 16 continued)

EASTERN UPPER PENINSULA

Species group	Total	Illinois	Indiana	Michigan	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
Softwoods									
Spruce	145	–	–	145	–	–	–	–	–
Red pine	100	–	–	100	–	–	–	–	–
White pine	108	–	–	5	–	–	–	–	103
Total	353	–	–	250	–	–	–	–	103
Hardwoods									
Soft maple	84	–	–	24	60	–	–	–	–
Hard maple	2,014	–	–	756	696	–	–	20	542
White birch	626	–	–	523	103	–	–	–	–
Yellow birch	70	–	–	39	32	–	–	–	–
Beech	42	–	–	30	12	–	–	–	–
Ash	19	–	–	–	19	–	–	–	–
Aspen	1,327	–	–	1,327	–	–	–	–	–
Black cherry	67	–	–	58	–	9	–	–	–
Red oak group	103	–	–	13	91	–	–	–	–
White oak grou	2	–	–	2	–	–	–	–	–
Basswood	47	–	–	3	43	–	–	–	–
Total	4,401	–	–	2,774	1,057	9	–	20	542
All species	4,755	–	–	3,024	1,057	9	–	20	645

WESTERN UPPER PENINSULA

Species group	Total	Illinois	Indiana	Michigan	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
Softwoods									
Spruce	705	–	–	705	–	–	–	–	–
Red pine	1,254	–	–	1,254	–	–	–	–	–
White pine	271	–	–	224	47	–	–	–	–
Total	2,229	–	–	2,182	47	–	–	–	–
Hardwoods									
Soft maple	545	–	–	–	545	–	–	–	–
Hard maple	5,892	–	–	245	5,579	–	–	68	–
White birch	2,036	–	–	62	1,974	–	–	–	–
Yellow birch	720	–	–	–	720	–	–	–	–
Beech	0	–	–	–	0	–	–	–	–
Ash	107	–	–	–	102	–	–	5	–
Aspen	10,691	–	–	10,575	116	–	–	–	–
Black cherry	44	–	–	9	25	10	–	–	–
Red oak group	1,670	–	–	14	1,656	–	–	–	–
White oak grou	14	–	–	1	12	–	–	–	–
Basswood	641	–	–	–	641	–	–	–	–
Total	22,362	–	–	10,906	11,372	10	–	73	–
All species	24,590	–	–	13,088	11,419	10	–	73	–

(Table 16 continued on next page)

(Table 16 continued)

NORTHERN LOWER PENINSULA

Species group	Total	Illinois	Indiana	Michigan	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
Softwoods									
White pine	71	–	–	–	–	–	–	–	71
Total	71	–	–	–	–	–	–	–	71
Hardwoods									
Soft maple	65	–	–	65	–	–	–	–	–
Hard maple	1,713	–	–	1,617	–	–	–	–	97
White birch	6	–	–	6	–	–	–	–	–
Yellow birch	31	–	–	31	–	–	–	–	–
Hickory	1	–	–	1	–	–	–	–	–
Beech	39	–	–	39	–	–	–	–	–
Ash	110	–	–	–	–	–	–	53	57
Black walnut	1	–	–	1	–	–	–	–	–
Black cherry	215	–	–	207	–	1	–	–	7
Red oak group	865	–	–	577	–	252	–	0	35
White oak grou	158	–	–	106	–	–	–	0	51
Basswood	61	–	–	52	–	–	–	–	9
Elm	2	–	–	–	–	–	–	–	2
Total	3,267	–	–	2,702	–	254	–	53	258
All species	3,337	–	–	2,702	–	254	–	53	329

SOUTHERN LOWER PENINSULA

Species group	Total	Illinois	Indiana	Michigan	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
Hardwoods									
Soft maple	16	–	–	16	–	–	–	–	–
Hard maple	4,075	57	2,261	205	–	–	1,509	–	43
River birch	67	–	67	–	–	–	–	–	–
Yellow birch	5	–	–	5	–	–	–	–	–
Hickory	139	–	3	50	–	82	–	–	3
Beech	80	–	–	7	–	–	–	–	73
Ash	143	–	24	–	–	–	53	29	36
Black walnut	372	–	169	6	–	48	42	88	19
Yellow-poplar	3	–	3	–	–	–	–	–	–
Cottonwood	308	–	–	308	–	–	–	–	–
Black cherry	854	219	426	193	–	–	11	–	5
Red oak group	1,467	–	498	207	–	158	581	0	22
White oak grou	750	57	236	81	–	–	102	1	274
Basswood	13	–	–	10	–	–	–	–	3
Elm	15	–	–	–	–	–	–	–	15
Total	8,305	333	3,687	1,088	–	288	2,298	118	494
All species	8,305	333	3,687	1,088	–	288	2,298	118	494

** = Less than 500 board feet.*

[1] *International 1/4-inch rule.*

Table 17.--Veneer log and bolt receipts by area of origin for select years, Michigan, 1946-1998

(In thousand board feet) [1]

Year	All areas	Area of origin				
		Michigan	Wisconsin	Minnesota	Other States	Canada[2]
1946	46,055	44,534	–	–	956	565
1948	53,899	50,151	127	–	699	2,922
1950	37,404	33,125	454	73	477	3,275
1952	28,547	24,077	1,046	341	650	2,433
1954	21,872	18,596	582	183	137	2,374
1956	23,564	20,341	105	177	80	2,861
1958	12,597	10,785	80	166	40	1,526
1960	12,075	8,628	450	500	245	2,252
1963	7,598	5,315	495	235	165	1,388
1965	12,428	10,344	805	102	180	997
1966	12,782	10,654	585	138	206	1,199
1968	9,573	8,375	332	173	283	410
1969	14,970	12,663	1,498	300	59	450
1970	6,729	5,399	79	77	246	928
1972	5,324	4,565	66	33	–	660
1974[3]	25,322	12,724	11,136	1,092	–	370
1975	26,851	15,609	10,885	357	–	–
1976	28,764	18,516	9,830	418	–	–
1977	30,838	30,378	–	–	460	–
1978	39,179	22,597	15,000	1,000	525	57
1980	27,287	22,087	5,200	–	–	–
1984	13,737	11,052	146	520	2,019	–
1988	39,220	18,623	16,502	–	4,095	–
1990	41,736	21,724	17,110	–	2,902	–
1992	40,251	19,167	16,870	177	3,153	884
1994	44,485	25,927	15,062	–	3,444	52
1996	54,673	39,832	2,312	–	11,628	901
1998	36,718	19,902	13,287	–	3,473	56

[1] International 1/4-inch rule.

[2] Includes only logs and bolts shipped to Canadian mills for processing.

[3] Includes all veneer logs received at Iron Wood Products Co.; such receipts are not shown before 1974.

Rows and columns may not sum due to rounding.

Table 18.--Veneer log and bolt receipts by species group and area of origin, Michigan, 1998

(In thousand board feet) [1]

Species group	Total	Illinois	Indiana	Iowa	Michigan	Minnesota	Wisconsin	Kentucky	Ohio	Other U.S.	Canada
Softwoods											
Spruce	1,600	–	–	–	850	–	750	–	–	–	–
Jack pine	140	–	–	–	–	–	140	–	–	–	–
Red pine	1,904	–	–	–	1,354	–	550	–	–	–	–
White pine	644	–	–	–	229	–	415	–	–	–	–
Total	4,287	–	–	–	2,432	–	1,855	–	–	–	–
Hardwoods											
Soft maple	105	–	–	–	105	–	–	–	–	–	–
Hard maple	5,200	250	499	127	2,823	–	500	500	500	–	–
White birch	667	–	–	–	591	–	20	–	–	–	56
Yellow birch	74	–	–	–	74	–	–	–	–	–	–
Hickory	51	–	–	–	51	–	–	–	–	–	–
Beech	75	–	–	–	75	–	–	–	–	–	–
Black walnut	57	11	9	9	7	–	7	7	7	–	–
Cottonwood	342	–	34	–	308	–	–	–	–	–	–
Aspen	22,402	–	–	–	11,902	–	10,500	–	–	–	–
Black cherry	760	31	62	16	467	–	62	62	62	–	–
Red oak group	2,013	129	253	62	811	–	253	253	253	–	–
White oak group	619	46	90	23	190	–	90	90	90	–	–
Basswood	66	–	–	–	66	–	–	–	–	–	–
Total	32,431	466	947	236	17,470	–	11,432	912	912	–	56
All species	36,718	466	947	236	19,902	–	13,287	912	912	–	56

[1] International 1/4-inch rule.

Rows and columns may not sum due to rounding.

Table 19.--Wood material harvested for industrial roundwood by Forest Survey Unit, species group, and source of material, Michigan, 1998[1]

(In thousand cubic feet)

ALL UNITS

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)	Total	Used for products				Logging slash (not used)	Total			
	Sawtimber	Pole-timber			Limb-wood	Sapling	Cull trees	Dead trees					
Softwoods													
Balsam fir	5,402.3	1,664.1	384.8	7,451.2	506.0	67.0	53.3	60.2	2,224.0	2,910.6	7,752.9	2,608.9	10,361.8
Redcedar	1.1	*	0.1	1.2	*	--	*	*	0.4	0.5	1.1	0.6	1.7
Tamarack	289.1	102.3	18.2	409.6	13.2	4.4	1.4	1.9	127.5	148.4	412.3	145.7	558.0
Spruce	6,804.0	1,216.0	624.6	8,644.5	241.1	50.9	37.2	101.8	2,877.1	3,308.2	8,451.1	3,501.6	11,952.7
Jack pine	19,132.0	4,615.6	1,361.1	25,108.6	2,820.8	182.4	192.7	836.3	6,763.1	10,795.3	27,779.7	8,124.2	35,903.9
Red pine	21,363.8	2,645.5	1,061.8	25,071.1	754.5	168.8	401.9	354.9	7,510.0	9,190.1	25,689.4	8,571.8	34,261.3
White pine	2,508.4	184.4	117.7	2,810.4	122.8	8.1	30.6	31.1	805.9	998.5	2,885.3	923.6	3,809.0
N. white-cedar	2,337.6	1,260.4	413.5	4,011.5	134.9	89.3	29.2	40.6	873.5	1,167.5	3,892.0	1,287.1	5,179.0
Hemlock	3,531.2	1,745.5	202.0	5,478.7	317.1	127.7	276.5	155.2	1,891.4	2,767.8	6,153.2	2,093.4	8,246.6
Other softwoods	59.8	72.3	--	132.1	95.8	0.7	13.1	--	6.2	115.9	241.8	6.2	248.0
Total	61,429.2	13,506.1	4,183.9	79,119.1	5,006.3	699.3	1,035.9	1,582.0	23,079.3	31,402.8	83,258.8	27,263.1	110,521.9
Hardwoods													
Soft maple	22,519.3	17,969.1	3,664.9	44,153.4	3,266.4	293.5	2,308.4	502.4	8,210.2	14,580.9	46,859.1	11,875.2	58,734.3
Hard maple	34,248.8	7,530.7	4,848.9	46,628.5	3,811.5	138.9	8,052.7	44.3	14,901.7	26,949.1	53,826.9	19,750.6	73,577.6
White birch	4,730.2	4,197.0	773.3	9,700.5	789.2	73.5	572.1	116.9	1,826.5	3,378.1	10,478.9	2,599.7	13,078.6
River birch	9.8	--	1.8	11.6	*	--	1.1	--	3.1	4.1	10.9	4.9	15.8
Yellow birch	3,314.1	762.6	429.4	4,506.1	382.7	9.6	955.0	3.1	1,567.0	2,917.4	5,427.2	1,996.4	7,423.5
Hickory	594.2	61.5	75.5	731.2	33.7	1.1	69.2	0.3	180.5	284.8	760.0	256.0	1,016.0
Hackberry	6.0	0.2	1.0	7.2	0.1	--	*	--	1.3	1.4	6.4	2.2	8.6
Beech	3,236.3	822.2	406.2	4,464.8	447.9	12.3	911.5	3.8	1,492.8	2,868.2	5,434.0	1,899.0	7,333.0
Ash	5,723.5	1,323.4	698.5	7,745.5	542.3	51.4	787.8	16.5	1,825.6	3,223.6	8,444.9	2,524.2	10,969.1
Butternut	1.7	0.1	0.3	2.0	*	--	*	--	0.3	0.4	1.8	0.6	2.4
Black walnut	218.4	2.7	30.5	251.6	3.7	*	8.8	--	50.8	63.3	233.6	81.4	314.9
Yellow-poplar	246.5	10.1	39.6	296.3	3.3	--	1.5	--	51.3	56.1	261.5	90.9	352.3
Sycamore	39.7	1.6	6.4	47.7	0.5	--	0.2	--	8.2	9.0	42.1	14.6	56.7
Cottonwood	1,330.7	252.9	217.9	1,801.5	47.3	1.1	42.5	6.4	333.5	430.8	1,680.9	551.4	2,232.3
Balsam poplar	2,036.5	2,816.3	364.8	5,217.6	440.2	17.9	414.4	86.4	1,125.1	2,084.0	5,811.7	1,489.9	7,301.6
Aspen	43,859.2	39,182.2	4,174.9	87,216.2	3,536.1	171.7	2,498.1	580.9	14,548.3	21,335.2	89,828.2	18,723.2	108,551.4
Black cherry	3,337.3	766.8	549.2	4,653.3	144.9	3.4	133.3	20.1	876.3	1,178.0	4,405.8	1,425.5	5,831.3
Red oak group	18,489.9	4,084.0	1,940.2	24,514.1	1,714.8	126.9	673.1	401.8	3,020.8	5,937.4	25,490.4	4,961.0	30,451.5
White oak group	3,771.2	2,345.7	395.7	6,512.6	602.3	89.9	205.9	134.1	773.3	1,805.4	7,149.0	1,169.0	8,318.1
Black locust	1.0	*	0.1	1.1	*	--	*	--	0.2	0.2	1.0	0.3	1.3
Willow	0.3	0.7	*	1.1	0.1	*	0.1	*	0.1	0.4	1.3	0.2	1.5
Sassafras	11.0	0.5	1.8	13.2	0.1	--	0.1	--	2.3	2.5	11.7	4.1	15.7
Basswood	5,862.8	3,251.6	945.6	10,060.1	581.2	67.1	397.6	87.0	1,792.0	2,925.0	10,247.5	2,737.6	12,985.1
Elm	244.0	43.5	39.5	327.0	9.9	0.2	6.7	1.0	59.1	76.9	305.3	98.6	403.9
Other hardwoods	2.2	0.1	0.3	2.6	56.1	0.9	554.3	4.5	406.5	1,022.3	618.0	406.8	1,024.9
Total	153,834.7	85,425.7	19,606.5	258,866.9	16,414.3	1,059.2	18,594.6	2,009.5	53,056.8	91,134.3	277,337.9	72,663.4	350,001.2
All species	215,263.8	98,931.8	23,790.4	337,986.0	21,420.6	1,758.5	19,630.5	3,591.4	76,136.1	122,537.1	360,596.7	99,926.5	460,523.2

(Table 19 continued on next page)

(Table 19 continued)

EASTERN UPPER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue		Used for products				Logging slash				
	Sawtimber	Pole-timber	(not used)	Total	Limb-wood	Sapling	Cull trees	Dead trees	(not used)	Total			
Softwoods													
Balsam fir	1,895.3	588.4	134.4	2,618.0	105.8	26.8	7.2	21.1	785.0	945.9	2,644.5	919.4	3,563.9
Tamarack	113.8	42.1	6.8	162.7	4.3	1.9	0.4	0.6	50.6	57.8	163.1	57.4	220.6
Spruce	2,225.8	522.1	182.8	2,930.7	85.2	22.5	10.1	27.9	950.1	1,095.9	2,893.7	1,132.9	4,026.6
Jack pine	5,096.0	1,605.2	428.8	7,129.9	355.3	73.6	46.1	243.3	2,236.1	2,954.4	7,419.4	2,664.9	10,084.3
Red pine	4,168.5	1,252.6	227.0	5,648.1	245.3	89.4	196.4	123.5	1,820.5	2,475.1	6,075.7	2,047.5	8,123.2
White pine	743.9	46.7	35.0	825.6	20.0	2.6	7.3	9.5	244.7	284.1	830.1	279.7	1,109.8
N. white-cedar	1,390.4	580.1	229.3	2,199.8	62.3	41.0	13.2	26.3	530.9	673.7	2,113.2	760.2	2,873.4
Hemlock	942.3	463.2	53.9	1,459.4	82.4	34.0	73.3	41.3	504.5	735.5	1,636.5	558.4	2,194.9
Total	16,576.0	5,100.3	1,298.1	22,974.4	960.6	291.7	354.0	493.6	7,122.4	9,222.3	23,776.2	8,420.5	32,196.7
Hardwoods													
Soft maple	3,701.5	3,709.2	632.9	8,043.6	593.1	36.5	521.0	110.4	1,627.5	2,888.6	8,671.7	2,260.5	10,932.2
Hard maple	5,855.7	1,449.7	829.0	8,134.3	789.0	4.7	2,113.4	1.5	3,266.6	6,175.3	10,214.0	4,095.6	14,309.6
White birch	1,416.8	1,042.7	237.8	2,697.3	171.0	13.3	150.0	30.2	528.5	893.0	2,823.9	766.4	3,590.3
Yellow birch	764.0	181.8	100.0	1,045.8	101.2	--	279.1	--	420.3	800.6	1,326.1	520.2	1,846.3
Hickory	*	*	*	*	*	--	*	--	*	*	*	*	*
Beech	1,112.1	162.5	141.7	1,416.2	93.2	0.7	229.8	0.2	436.9	760.9	1,598.4	578.6	2,177.1
Ash	931.1	80.0	117.1	1,128.2	51.0	0.4	109.3	0.1	283.7	444.5	1,171.9	400.9	1,572.8
Butternut	0.1	*	*	0.1	*	--	*	--	*	*	0.1	*	0.1
Cottonwood	*	*	*	0.1	*	--	*	--	*	*	*	*	0.1
Balsam poplar	255.4	363.6	46.0	665.0	56.5	2.2	53.7	11.2	144.3	267.9	742.6	190.3	932.9
Aspen	6,375.8	6,647.0	720.9	13,743.6	343.2	11.7	415.5	93.6	2,368.8	3,232.9	13,886.8	3,089.7	16,976.5
Black cherry	281.0	206.5	48.3	535.8	32.9	1.0	31.9	6.2	110.7	182.7	559.6	159.0	718.5
Red oak group	259.3	103.6	30.3	393.3	23.8	1.7	13.2	8.9	57.0	104.6	410.6	87.3	497.9
White oak group	5.7	2.9	0.7	9.3	0.6	*	0.4	0.2	1.4	2.7	9.8	2.1	12.0
Basswood	422.4	326.7	74.0	823.1	52.0	2.9	46.5	9.5	161.4	272.3	860.0	235.4	1,095.4
Elm	1.1	0.4	0.2	1.7	0.1	*	0.1	*	0.3	0.4	1.6	0.5	2.1
Other hardwoods	--	--	--	--	19.5	0.3	199.5	1.7	147.1	368.0	221.0	147.1	368.0
Total	21,381.9	14,276.6	2,979.0	38,637.5	2,327.1	75.5	4,163.4	273.8	9,554.7	16,394.4	42,498.1	12,533.7	55,031.8
All species	37,957.9	19,376.8	4,277.1	61,611.8	3,287.7	367.2	4,517.4	767.4	16,677.1	25,616.7	66,274.4	20,954.2	87,228.6

(Table 19 continued on next page)

(Table 19 continued)

WESTERN UPPER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)		Used for products				Logging slash (not used)				
	Sawtimber	Pole-timber		Total	Limb-wood	Sapling	Cull trees	Dead trees		Total			
Softwoods													
Balsam fir	3,173.3	847.3	243.4	4,263.9	112.5	36.7	11.3	33.9	1,381.7	1,576.2	4,215.0	1,625.1	5,840.1
Tamarack	160.8	58.0	9.9	228.7	6.1	2.6	0.6	1.0	71.3	81.5	229.0	81.2	310.2
Spruce	4,428.9	673.3	429.5	5,531.7	141.3	27.7	26.3	70.7	1,872.6	2,138.6	5,368.2	2,302.1	7,670.3
Jack pine	5,188.2	1,435.9	482.3	7,106.4	264.5	65.9	44.1	227.0	2,338.5	2,940.1	7,225.7	2,820.8	10,046.5
Red pine	2,841.0	681.4	170.6	3,692.9	139.9	48.2	124.6	70.7	1,173.4	1,556.7	3,905.7	1,344.0	5,249.7
White pine	738.9	75.8	39.4	854.0	21.7	4.9	14.8	11.2	259.1	311.7	867.2	298.5	1,165.7
N. white-cedar	609.2	172.2	78.2	859.6	22.6	10.8	3.9	10.6	248.2	296.1	829.4	326.4	1,155.8
Hemlock	2,474.2	1,272.2	143.3	3,889.7	224.7	93.5	201.7	112.6	1,351.2	1,983.7	4,378.8	1,494.5	5,873.3
Total	19,614.4	5,216.0	1,596.5	26,426.9	933.2	290.3	427.4	537.7	8,696.1	10,884.6	27,018.9	10,292.6	37,311.5
Hardwoods													
Soft maple	7,022.1	7,651.5	1,219.4	15,893.0	1,210.7	63.1	1,105.3	230.6	3,296.9	5,906.6	17,283.3	4,516.3	21,799.6
Hard maple	14,396.4	4,225.6	2,018.1	20,640.2	1,967.7	76.2	4,755.0	24.7	7,578.2	14,401.7	25,445.6	9,596.3	35,041.9
White birch	1,979.3	1,630.9	346.3	3,956.5	258.8	11.5	269.8	49.2	838.2	1,427.5	4,199.6	1,184.5	5,384.1
Yellow birch	2,421.1	561.2	313.6	3,295.9	271.0	8.9	665.1	2.9	1,112.4	2,060.2	3,930.1	1,426.0	5,356.1
Hickory	2.2	1.7	0.3	4.1	0.6	0.1	1.4	*	1.7	3.8	5.9	2.0	7.9
Beech	741.0	290.1	99.3	1,130.4	155.1	--	447.0	--	581.7	1,183.8	1,633.2	681.0	2,314.3
Ash	854.7	539.2	103.5	1,497.3	183.3	20.9	356.8	6.8	505.2	1,073.0	1,961.6	608.7	2,570.3
Butternut	1.4	0.1	0.2	1.7	*	--	*	--	0.3	0.3	1.5	0.5	2.0
Cottonwood	0.3	0.7	*	1.0	0.1	*	0.1	*	0.1	0.4	1.2	0.2	1.4
Balsam poplar	858.2	1,235.2	154.2	2,247.5	192.2	8.2	181.1	37.9	485.3	904.7	2,512.7	639.5	3,152.2
Aspen	13,403.0	13,471.0	1,356.2	28,230.3	837.5	38.5	978.4	199.1	5,056.5	7,110.1	28,927.6	6,412.7	35,340.3
Black cherry	493.1	455.5	85.9	1,034.6	71.7	2.3	68.8	13.9	217.4	374.0	1,105.3	303.3	1,408.6
Red oak group	1,052.7	401.3	137.8	1,591.7	89.7	6.9	68.7	32.2	259.6	457.0	1,651.4	397.4	2,048.7
White oak group	20.4	47.2	3.5	71.1	8.8	0.5	4.0	2.8	13.0	29.1	83.7	16.5	100.2
Willow	0.3	0.7	*	1.1	0.1	*	0.1	*	0.1	0.4	1.3	0.2	1.5
Basswood	2,153.7	1,665.7	345.1	4,164.6	284.8	39.6	197.9	45.2	737.6	1,305.1	4,387.0	1,082.7	5,469.7
Elm	14.9	15.6	2.6	33.1	2.5	0.1	2.2	0.5	6.8	12.1	35.8	9.4	45.2
Other hardwoods	--	--	--	--	33.0	0.6	336.9	2.8	248.0	621.5	373.5	248.0	621.5
Total	45,414.8	32,193.2	6,186.1	83,794.1	5,567.6	277.5	9,438.4	648.6	20,939.1	36,871.3	93,540.2	27,125.2	120,665.4
All species	65,029.2	37,409.3	7,782.5	110,221.0	6,500.8	567.8	9,865.8	1,186.3	29,635.3	47,755.9	120,559.1	37,417.8	157,976.9

(Table 19 continued on next page)

(Table 19 continued)

NORTHERN LOWER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue (not used)	Total	Used for products				Logging slash (not used)	Total			
	Sawtimber	Pole-timber			Limb-wood	Sapling	Cull trees	Dead trees					
Softwoods													
Balsam fir	333.7	228.5	7.1	569.2	287.7	3.5	34.8	5.2	57.3	388.5	893.4	64.4	957.8
Tamarack	10.4	2.1	1.0	13.6	2.7	*	0.4	0.2	3.9	7.1	15.8	4.9	20.7
Spruce	144.3	20.5	11.7	176.6	14.3	0.7	0.7	3.1	52.4	71.4	183.8	64.2	247.9
Jack pine	8,765.5	1,565.4	448.3	10,779.2	2,176.3	42.7	102.3	362.0	2,177.8	4,861.1	13,014.3	2,626.0	15,640.3
Red pine	13,642.8	696.3	631.9	14,971.0	356.8	31.0	80.4	153.9	4,299.6	4,921.8	14,961.2	4,931.5	19,892.7
White pine	816.6	58.3	34.4	909.3	77.3	0.7	8.5	8.4	237.6	332.5	969.7	272.1	1,241.8
N. white-cedar	338.0	508.1	106.0	952.1	50.1	37.5	12.0	3.7	94.4	197.7	949.4	200.4	1,149.9
Hemlock	107.4	9.8	4.5	121.7	9.8	0.2	1.4	1.1	33.3	45.9	129.8	37.8	167.6
Other softwood	59.8	72.3	--	132.1	95.8	0.7	13.1	--	6.2	115.9	241.8	6.2	248.0
Total	24,218.5	3,161.3	1,244.9	28,624.7	3,070.9	117.0	253.7	537.8	6,962.6	10,941.9	31,359.1	8,207.5	39,566.6
Hardwoods													
Soft maple	8,664.0	5,523.1	1,332.6	15,519.6	1,249.2	145.4	604.9	138.0	2,570.7	4,708.2	16,324.5	3,903.3	20,227.8
Hard maple	11,375.9	1,774.8	1,599.2	14,749.9	979.9	57.5	1,040.5	18.0	3,358.4	5,454.3	15,246.5	4,957.7	20,204.2
White birch	1,247.3	1,510.1	175.4	2,932.9	356.4	48.1	151.3	37.3	441.2	1,034.4	3,350.6	616.7	3,967.3
Yellow birch	122.6	19.5	15.1	157.1	10.3	0.7	10.7	0.2	32.9	54.9	164.1	47.9	212.0
Hickory	42.7	19.6	5.0	67.3	5.7	1.0	7.1	0.3	14.7	28.9	76.5	19.7	96.2
Beech	980.3	338.3	113.9	1,432.4	178.8	11.5	189.1	3.5	352.8	735.8	1,701.5	466.7	2,168.2
Ash	2,704.8	677.0	323.5	3,705.2	278.2	30.0	289.8	9.5	771.8	1,379.3	3,989.3	1,095.3	5,084.6
Black walnut	0.4	*	0.1	0.5	*	*	*	--	0.1	0.1	0.5	0.2	0.7
Cottonwood	901.9	151.4	146.6	1,199.9	29.2	0.6	22.6	3.6	217.3	273.4	1,109.3	363.9	1,473.2
Balsam poplar	899.4	1,198.8	160.5	2,258.7	188.5	7.4	176.8	36.7	485.9	895.4	2,507.7	646.4	3,154.2
Aspen	22,757.4	17,922.4	1,986.1	42,665.9	2,235.3	113.0	1,041.3	269.9	6,728.2	10,387.7	44,339.3	8,714.3	53,053.6
Black cherry	703.7	33.5	113.0	850.2	17.1	0.1	8.6	--	148.9	174.6	762.9	262.0	1,024.8
Red oak group	11,438.7	2,607.2	1,161.2	15,207.1	1,304.6	77.4	420.3	244.5	1,801.3	3,848.1	16,092.8	2,962.4	19,055.2
White oak group	1,622.4	1,411.8	170.1	3,204.4	386.8	45.6	117.1	75.0	390.3	1,014.9	3,658.8	560.5	4,219.2
Basswood	2,768.3	1,214.9	442.9	4,426.0	234.1	24.4	146.7	31.5	779.6	1,216.3	4,419.9	1,222.5	5,642.3
Elm	50.4	12.3	8.1	70.8	3.8	0.1	1.9	0.3	12.7	18.8	68.7	20.8	89.5
Other hardwoods	0.6	*	0.1	0.7	3.7	*	17.7	--	11.1	32.5	22.0	11.2	33.2
Total	66,280.7	34,414.8	7,753.2	108,448.7	7,461.6	562.8	4,246.4	868.6	18,118.1	31,257.5	113,834.9	25,871.3	139,706.2
All species	90,499.2	37,576.1	8,998.1	137,073.4	10,532.5	679.8	4,500.1	1,406.3	25,080.7	42,199.4	145,194.0	34,078.8	179,272.8

(Table 19 continued on next page)

(Table 19 continued)

SOUTHERN LOWER PENINSULA

Species group	Growing stock				Non-growing stock						Total material used for products	Total material not used	Total material harvested
	Used for products		Logging residue		Used for products				Logging slash				
	Sawtimber	Pole-timber	(not used)	Total	Limb-wood	Sapling	Cull trees	Dead trees	(not used)	Total			
Softwoods													
Balsam fir	*	*	*	*	*	--	*	*	*	*	*	*	*
Redcedar	1.1	*	0.1	1.2	*	--	*	*	0.4	0.5	1.1	0.6	1.7
Tamarack	4.1	0.1	0.5	4.7	0.1	--	*	0.1	1.7	1.9	4.4	2.2	6.6
Spruce	4.9	0.1	0.5	5.6	0.3	--	*	0.1	1.9	2.3	5.5	2.4	7.9
Jack pine	82.4	9.1	1.7	93.1	24.7	0.2	0.1	3.9	10.8	39.7	120.4	12.4	132.8
Red pine	711.6	15.2	32.3	759.1	12.5	0.2	0.7	6.7	216.5	236.6	746.8	248.8	995.7
White pine	209.0	3.5	9.0	221.5	3.8	--	--	2.0	64.5	70.3	218.3	73.4	291.8
Hemlock	7.2	0.4	0.3	7.9	0.2	*	0.1	0.1	2.4	2.7	8.0	2.7	10.7
Total	1,020.3	28.4	44.4	1,093.1	41.6	0.4	0.9	12.9	298.2	354.0	1,104.5	342.6	1,447.1
Hardwoods													
Soft maple	3,131.8	1,085.4	480.0	4,697.2	213.4	48.4	77.2	23.4	715.1	1,077.5	4,579.6	1,195.1	5,774.7
Hard maple	2,620.9	80.7	402.6	3,104.1	74.9	0.4	143.8	0.1	698.5	917.7	2,920.8	1,101.1	4,021.8
White birch	86.8	13.3	13.7	113.7	2.9	0.5	1.0	0.2	18.5	23.2	104.8	32.2	137.0
River birch	9.8	--	1.8	11.6	*	--	1.1	--	3.1	4.1	10.9	4.9	15.8
Yellow birch	6.4	0.1	0.8	7.4	0.1	*	0.2	*	1.4	1.7	6.9	2.2	9.1
Hickory	549.3	40.2	70.3	659.7	27.4	*	60.7	*	164.0	252.1	677.5	234.3	911.8
Hackberry	6.0	0.2	1.0	7.2	0.1	--	*	--	1.3	1.4	6.4	2.2	8.6
Beech	403.0	31.3	51.4	485.7	20.8	0.1	45.6	*	121.3	187.8	500.8	172.7	673.4
Ash	1,233.0	27.2	154.5	1,414.7	29.7	0.1	32.0	*	264.8	326.7	1,322.1	419.3	1,741.4
Butternut	0.2	*	*	0.2	*	--	*	--	*	*	0.2	0.1	0.2
Black walnut	217.9	2.7	30.5	251.1	3.7	--	8.8	--	50.7	63.2	233.1	81.2	314.3
Yellow-poplar	246.5	10.1	39.6	296.3	3.3	--	1.5	--	51.3	56.1	261.5	90.9	352.3
Sycamore	39.7	1.6	6.4	47.7	0.5	--	0.2	--	8.2	9.0	42.1	14.6	56.7
Cottonwood	428.5	100.8	71.3	600.6	17.9	0.5	19.9	2.7	116.0	157.0	570.3	187.3	757.6
Balsam poplar	23.6	18.7	4.1	46.4	3.0	0.1	2.8	0.6	9.5	16.0	48.7	13.6	62.3
Aspen	1,323.0	1,141.8	111.7	2,576.5	120.1	8.4	62.9	18.2	394.8	604.5	2,674.5	506.5	3,181.0
Black cherry	1,859.5	71.2	302.0	2,232.7	23.3	--	24.0	--	399.3	446.6	1,978.0	701.3	2,679.3
Red oak group	5,739.2	971.9	610.9	7,322.0	296.7	40.8	170.9	116.2	903.0	1,527.6	7,335.7	1,513.9	8,849.6
White oak group	2,122.8	883.8	221.4	3,227.9	206.1	43.7	84.4	56.0	368.6	758.8	3,396.8	589.9	3,986.7
Black locust	1.0	*	0.1	1.1	*	--	*	--	0.2	0.2	1.0	0.3	1.3
Sassafras	11.0	0.5	1.8	13.2	0.1	--	0.1	--	2.3	2.5	11.7	4.1	15.7
Basswood	518.5	44.3	83.6	646.4	10.4	0.2	6.5	0.7	113.4	131.4	580.7	197.0	777.7
Elm	177.5	15.2	28.7	221.5	3.5	*	2.5	0.3	39.2	45.6	199.1	67.9	267.0
Other hardwoods	1.6	0.1	0.3	1.9	*	--	*	--	0.3	0.4	1.7	0.6	2.3
Total	20,757.3	4,541.2	2,688.2	27,986.6	1,058.0	143.3	746.3	218.6	4,444.9	6,611.1	27,464.7	7,133.1	34,597.8
All species	21,777.6	4,569.6	2,732.6	29,079.8	1,099.6	143.7	747.2	231.4	4,743.1	6,965.1	28,569.2	7,475.7	36,044.9

**=Less than 50 cubic feet.*

[1] Based on factors obtained from the Michigan Utilization Study of 1980 and other regional utilization studies.

Rows and columns may not sum due to rounding.

Table 20.--Growing-stock removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1998

(In thousand cubic feet)

Forest Survey Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	River birch	Yellow birch	Hickory	Hack-berry
EASTERN UPPER PENINSULA																		
Alger	240	--	20	166	369	518	101	--	86	228	1,727	1,972	2,051	349	--	355	--	--
Chippewa	406	--	23	468	1,209	997	110	--	223	116	3,551	883	735	326	--	63	--	--
Delta	757	--	46	747	809	814	99	--	536	233	4,041	1,119	1,216	584	--	169	--	--
Luce	101	--	7	211	1,469	806	145	--	79	506	3,324	1,264	1,365	148	--	161	--	--
Mackinac	446	--	16	403	982	958	79	--	247	114	3,246	904	964	493	--	81	--	--
Menominee	278	--	29	244	88	129	137	--	782	77	1,764	793	768	407	--	92	*	--
Schoolcraft	389	--	22	692	2,205	1,427	155	--	247	186	5,322	1,109	1,035	390	--	124	--	--
Total	2,618	--	163	2,931	7,130	5,648	826	--	2,200	1,459	22,974	8,044	8,134	2,697	--	1,046	*	--
WESTERN UPPER PENINSULA																		
Baraga	380	--	23	761	1,001	496	130	--	110	1,058	3,958	2,070	3,452	440	--	558	--	--
Dickinson	660	--	26	818	721	339	148	--	143	132	2,985	670	929	362	--	105	*	--
Gogebic	283	--	3	551	622	304	27	--	67	403	2,260	1,974	2,530	313	--	392	3	--
Houghton	507	--	22	646	440	673	64	--	75	354	2,781	2,661	4,197	464	--	596	*	--
Iron	1,167	--	79	948	946	725	147	--	99	330	4,441	2,362	2,710	872	--	540	*	--
Keweenaw	149	--	3	237	48	27	51	--	75	153	744	1,119	998	239	--	209	--	--
Marquette	1,027	--	71	1,338	3,284	656	258	--	255	1,192	8,081	3,051	3,402	1,064	--	427	*	--
Ontonagon	91	--	2	233	44	473	30	--	35	267	1,175	1,987	2,424	202	--	469	*	--
Total	4,264	--	229	5,532	7,106	3,693	854	--	860	3,890	26,427	15,893	20,640	3,957	--	3,296	4	--
NORTHERN LOWER PENINSULA																		
Alcona	23	--	--	1	211	425	27	8	1	--	695	355	248	151	--	*	--	--
Alpena	90	--	1	7	157	69	22	26	722	--	1,095	403	140	193	--	--	--	--
Antrim	9	--	*	2	507	208	16	--	14	8	765	368	1,152	162	--	12	*	--
Arenac	*	--	--	--	12	8	4	--	21	--	45	315	55	34	--	*	*	--
Bay	--	--	--	--	--	--	--	--	--	--	--	73	*	14	--	--	--	--
Benzie	*	--	*	*	107	222	3	--	1	9	342	422	915	46	--	5	4	--
Charlevoix	5	--	1	2	80	281	15	--	17	4	405	130	996	80	--	27	*	--
Cheboygan	76	--	*	36	805	812	33	7	17	*	1,786	680	811	280	--	1	--	--
Clare	*	--	1	--	63	326	26	--	1	--	417	741	178	44	--	3	4	--
Crawford	*	--	--	*	1,530	676	21	--	--	2	2,229	242	166	33	--	--	--	--
Emmet	4	--	*	1	171	261	16	--	14	3	470	435	1,273	141	--	5	--	--
Gladwin	*	--	--	--	41	59	18	--	15	*	134	635	83	130	--	3	2	--
Grand Traverse	--	--	4	--	143	785	21	--	2	8	963	406	612	31	--	2	3	--
Iosco	2	--	--	*	238	565	94	--	17	*	916	404	138	73	--	*	*	--
Isabella	--	--	--	*	42	78	7	--	*	3	130	496	225	47	--	3	1	--
Kalkaska	10	--	1	5	718	1,564	32	--	3	17	2,349	589	737	115	--	7	2	--
Lake	--	--	*	--	336	417	55	--	3	3	814	480	210	53	--	3	4	--
Leelanau	*	--	1	*	3	257	13	--	4	3	281	40	491	7	--	5	*	--
Manistee	--	--	1	--	132	419	30	--	1	5	588	824	972	43	--	7	4	--
Mason	--	--	--	--	13	287	21	--	1	2	324	386	369	19	--	3	9	--
Mecosta	--	--	*	4	28	196	87	--	*	14	330	463	313	32	--	10	2	--
Midland	--	--	--	--	4	24	12	--	--	4	43	687	83	72	--	2	6	--
Missaukee	2	--	1	1	455	402	13	--	8	1	882	760	321	102	--	2	2	--
Montmorency	86	--	--	6	515	283	28	33	4	--	954	585	444	187	--	15	--	--
Newaygo	--	--	1	--	41	706	119	--	--	8	874	1,030	382	24	--	4	18	--
Oceana	--	--	*	1	85	1,008	9	--	--	6	1,109	482	310	6	--	4	*	--
Ogemaw	1	--	--	*	259	154	3	--	24	--	441	302	185	69	--	15	1	--
Osceola	*	--	*	*	111	184	9	--	5	11	321	428	600	48	--	5	4	--
Oscoda	41	--	--	2	1,146	520	51	13	1	--	1,775	367	244	157	--	1	--	--
Otsego	28	--	--	1	1,034	1,096	27	11	1	--	2,197	608	1,025	167	--	2	--	--
Presque Isle	154	--	--	45	364	206	19	34	48	--	871	416	254	241	--	1	--	--
Roscommon	27	--	--	9	1,048	380	7	--	5	--	1,476	600	27	103	--	1	*	--
Wexford	10	--	1	52	379	2,094	51	--	3	12	2,603	365	790	29	--	7	2	--
Total	569	--	14	177	10,779	14,971	909	132	952	122	28,625	15,520	14,750	2,933	--	157	67	--

(Table 20 continued)

Forest Survey Unit and county	Balsam fir	Red-cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	River birch	Yellow birch	Hickory	Hackberry
SOUTHERN LOWER PENINSULA																		
Allegan	--	--	--	--	4	58	12	--	--	1	74	431	49	25	--	1	39	1
Barry	--	--	*	3	1	69	*	--	--	--	74	192	398	10	1	*	41	1
Berrien	--	--	--	--	--	3	*	--	--	--	3	41	210	--	3	--	10	1
Branch	--	--	--	--	--	--	--	--	--	--	--	153	103	1	--	--	6	--
Calhoun	--	--	--	--	--	*	--	--	--	--	*	132	27	*	1	*	49	1
Cass	--	--	--	--	--	--	--	--	--	--	--	306	67	--	1	1	17	1
Clinton	--	--	--	--	1	81	--	--	--	--	82	153	40	1	--	--	11	--
Eaton	--	--	--	--	--	12	--	--	--	--	12	53	184	*	--	--	22	--
Genesee	--	--	--	--	--	--	*	--	--	--	*	31	74	*	--	--	4	--
Gratiot	--	--	--	--	--	2	12	--	--	--	15	124	12	1	--	--	--	--
Hillsdale	--	--	--	--	--	--	*	--	--	--	*	15	154	*	--	--	4	--
Huron	--	--	--	--	--	--	--	--	--	--	--	53	16	1	--	--	1	--
Ingham	--	--	--	--	--	--	--	--	--	--	--	37	38	*	--	--	5	--
Ionia	--	--	2	1	--	--	1	--	--	--	4	26	69	4	--	--	25	--
Jackson	--	--	--	--	--	--	--	--	--	1	1	33	--	*	1	--	52	1
Kalamazoo	--	--	--	*	--	10	10	--	--	--	20	109	23	1	--	--	12	*
Kent	--	--	*	--	--	86	5	--	--	--	91	442	463	10	2	1	24	*
Lapeer	--	--	--	--	1	2	--	--	--	--	2	74	103	1	--	--	7	--
Lenawee	--	--	--	--	--	--	--	--	--	--	--	15	193	--	--	--	36	--
Livingston	--	--	--	--	--	*	--	--	--	--	*	54	2	1	--	--	17	--
Macomb	--	*	--	--	--	2	--	--	--	--	2	27	24	--	--	*	5	--
Monroe	--	--	--	--	--	--	--	--	--	--	--	20	29	--	--	--	21	--
Montcalm	--	--	2	--	*	66	40	--	--	1	110	363	78	9	1	1	10	--
Muskegon	--	1	--	1	5	208	30	--	--	3	248	577	53	14	--	*	22	--
Oakland	--	--	--	*	48	2	10	--	--	--	60	61	61	--	--	--	23	--
Ottawa	--	--	--	--	1	74	90	--	--	2	167	174	110	8	--	2	1	--
Saginaw	--	--	--	--	--	*	*	--	--	--	*	111	43	3	--	--	9	--
Sanilac	--	--	--	--	1	--	--	--	--	--	1	41	16	2	--	--	1	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	--	70	45	*	--	--	76	--
St. Clair	--	--	--	--	--	2	1	--	--	--	2	77	60	*	--	--	7	--
St. Joseph	--	--	--	--	--	21	*	--	--	--	21	141	21	--	1	--	34	*
Tuscola	--	--	--	--	9	6	--	--	--	--	15	56	67	11	--	--	2	--
Van Buren	*	--	--	*	--	53	9	--	--	--	63	444	258	--	2	--	30	1
Washtenaw	--	--	--	--	--	--	--	--	--	--	--	25	2	1	1	--	34	--
Wayne	--	--	--	*	22	2	1	--	--	--	25	35	9	9	--	--	4	--
Total	*	1	5	6	93	759	221	--	--	8	1,093	4,697	3,104	114	12	7	660	7
State total	7,451	1	410	8,645	25,109	25,071	2,810	132	4,012	5,479	79,119	44,153	46,629	9,700	12	4,506	731	7

(Table 20 continued on next page)

(Table 20 continued)

Forest Survey Unit and county	Beech	Ash	Butternut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Black locust	Willow	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
EASTERN UPPER PENINSULA																				
Alger	519	92	*	--	--	--	--	77	869	182	70	2	--	--	--	186	*	*	6,724	8,451
Chippewa	52	42	--	--	--	--	*	54	2,789	38	38	*	--	--	--	54	*	*	5,075	8,626
Delta	177	71	*	--	--	--	--	160	2,504	75	59	3	--	--	--	175	*	*	6,312	10,353
Luce	381	706	*	--	--	--	--	44	1,060	86	36	*	--	--	--	78	--	*	5,329	8,653
Mackinac	84	45	*	--	--	--	--	74	2,645	43	52	--	--	--	--	82	--	*	5,466	8,712
Menominee	63	125	--	--	--	--	--	153	2,536	44	123	2	--	--	--	178	1	*	5,284	7,048
Schoolcraft	141	48	*	--	--	--	--	103	1,341	68	16	1	--	--	--	70	*	*	4,447	9,769
Total	1,416	1,128	*	--	--	--	*	665	13,744	536	393	9	--	--	--	823	2	*	38,637	61,612
WESTERN UPPER PENINSULA																				
Baraga	114	190	1	--	--	--	--	213	2,076	104	168	9	--	--	--	492	1	*	9,889	13,847
Dickinson	44	69	--	--	--	--	*	292	4,220	41	110	5	--	*	--	525	16	*	7,387	10,372
Gogebic	136	283	*	--	--	--	*	67	2,395	182	180	27	--	*	--	493	8	*	8,983	11,243
Houghton	156	280	*	--	--	--	--	349	3,464	143	225	5	--	--	--	689	1	*	13,230	16,012
Iron	165	182	1	--	--	--	*	425	4,508	193	294	11	--	*	--	609	3	*	12,875	17,317
Keweenaw	81	64	--	--	--	--	--	48	389	80	174	1	--	--	--	140	*	*	3,541	4,285
Marquette	300	127	*	--	--	--	*	598	6,082	137	334	7	--	*	--	389	1	*	15,918	23,999
Ontonagon	135	301	--	--	--	--	*	256	5,097	155	108	7	--	*	--	826	2	*	11,970	13,146
Total	1,130	1,497	2	--	--	--	1	2,248	28,230	1,035	1,592	71	--	1	--	4,165	33	*	83,794	110,221
NORTHERN LOWER PENINSULA																				
Alcona	41	625	--	--	--	--	--	615	3,774	9	1,331	60	--	--	--	131	6	--	7,346	8,041
Alpena	31	71	--	--	--	--	--	237	1,735	*	375	22	--	--	--	47	*	--	3,256	4,350
Antrim	72	92	--	--	--	--	*	8	697	17	34	14	--	--	--	585	5	*	3,220	3,985
Arenac	12	65	--	--	--	--	22	15	864	1	49	3	--	--	--	16	*	--	1,452	1,497
Bay	--	20	--	--	--	--	11	--	135	2	3	8	--	--	--	2	*	--	268	268
Benzie	68	140	--	--	--	--	--	4	469	22	356	120	--	--	--	162	*	--	2,733	3,075
Charlevoix	49	98	--	--	--	--	1	20	295	7	28	9	--	--	--	427	2	--	2,171	2,576
Cheboygan	39	55	--	--	--	--	--	129	3,050	11	190	24	--	--	--	311	*	--	5,583	7,368
Clare	36	104	--	--	--	--	65	30	2,417	42	781	180	--	--	--	41	2	--	4,669	5,086
Crawford	17	19	--	--	--	--	--	1	806	3	440	31	--	--	--	45	3	--	1,806	4,035
Emmet	111	89	--	--	--	--	--	73	1,280	29	51	1	--	--	--	186	2	*	3,677	4,148
Gladwin	25	97	--	--	--	--	55	97	2,562	2	286	151	--	--	--	57	2	--	4,187	4,321
Grand Traverse	32	59	--	--	--	--	1	4	482	14	404	87	--	--	--	112	1	*	2,248	3,211
Iosco	3	71	--	--	--	--	823	84	1,404	2	199	18	--	--	--	101	1	--	3,322	4,238
Isabella	30	58	--	--	--	--	65	58	1,274	7	197	42	--	--	--	32	12	--	2,547	2,677
Kalkaska	45	63	--	*	--	--	--	15	1,331	16	169	60	--	--	--	199	1	*	3,349	5,698
Lake	38	150	--	--	--	--	61	4	971	35	1,221	463	--	--	--	124	2	*	3,818	4,633
Leelanau	48	132	--	--	--	--	--	1	57	2	21	4	--	--	--	74	2	*	884	1,165
Manistee	111	164	--	--	--	--	*	31	705	89	822	266	--	--	--	117	1	*	4,153	4,741
Mason	32	65	--	--	--	--	--	16	445	50	806	160	--	--	--	38	1	*	2,398	2,721
Mecosta	39	116	--	--	--	--	7	39	922	52	306	85	--	--	--	40	6	--	2,433	2,763
Midland	21	113	--	--	--	--	29	8	1,065	8	242	202	--	--	--	68	1	--	2,607	2,650
Missaukee	35	95	--	--	--	--	*	13	1,636	19	331	88	--	--	--	82	1	*	3,489	4,372
Montmorency	47	72	--	--	--	--	--	229	2,016	5	810	47	--	--	--	267	2	--	4,727	5,681
Newaygo	62	158	--	*	--	--	27	14	693	145	1,706	544	--	--	--	84	9	*	4,898	5,772
Oceana	65	63	--	--	--	--	23	37	737	70	584	159	--	--	--	24	2	*	2,565	3,674
Ogemaw	14	342	--	*	--	--	--	45	2,086	1	719	32	--	--	--	42	*	--	3,853	4,294
Osceola	95	167	--	--	--	--	2	21	1,208	56	596	105	--	--	--	108	2	*	3,443	3,765
Oscoda	37	44	--	--	--	--	--	176	1,724	12	738	30	--	--	--	421	*	--	3,952	5,727
Otsego	75	40	--	--	--	--	--	22	1,502	4	137	10	--	--	--	254	1	--	3,847	6,044
Presque Isle	31	51	--	--	--	--	--	198	2,059	*	483	25	--	--	--	70	*	--	3,829	4,699
Roscommon	4	79	--	--	--	--	6	11	1,629	3	557	69	--	--	--	19	--	--	3,107	4,582
Wexford	70	127	--	*	--	--	--	5	636	113	236	86	--	--	--	142	3	*	2,612	5,215
Total	1,432	3,705	--	1	--	--	1,200	2,259	42,666	850	15,207	3,204	--	--	--	4,426	71	1	108,449	137,073

(Table 20 continued on next page)

(Table 20 continued)

Forest Survey Unit and county	Beech	Ash	Butternut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Black locust	Willow	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
SOUTHERN LOWER PENINSULA																				
Allegan	30	93	*	9	167	--	20	--	130	115	804	500	*	--	2	26	13	*	2,454	2,528
Barry	27	44	*	13	8	--	3	--	22	188	592	105	*	--	2	44	15	*	1,705	1,779
Berrien	11	17	*	7	70	48	17	*	1	149	77	51	*	--	2	15	10	*	739	742
Branch	1	37	--	3	3	--	4	--	14	37	88	56	--	--	--	7	2	--	515	515
Calhoun	11	84	*	6	8	--	49	--	67	167	121	102	*	--	1	69	20	*	916	916
Cass	4	21	*	26	9	--	2	--	18	249	313	95	*	--	1	10	13	*	1,152	1,152
Clinton	--	10	--	6	--	--	*	--	35	51	31	10	--	--	--	10	3	--	363	445
Eaton	13	81	--	12	1	--	3	--	*	46	51	39	--	--	*	48	18	--	572	584
Genesee	6	30	--	4	--	--	7	--	2	6	66	19	--	--	--	19	5	--	273	273
Gratiot	--	47	--	--	--	--	38	--	41	1	132	32	--	--	--	29	4	--	462	477
Hillsdale	--	18	--	9	--	--	*	--	*	29	25	11	--	--	--	11	1	--	277	277
Huron	1	41	--	--	--	--	62	11	58	4	8	5	--	--	--	6	1	--	268	268
Ingham	3	28	--	--	--	--	3	--	3	14	17	7	--	--	--	11	4	--	170	170
Ionia	47	35	--	2	--	--	11	--	55	88	122	11	--	--	--	44	8	--	547	551
Jackson	--	31	*	21	--	--	1	--	1	121	248	148	*	--	1	20	3	*	683	684
Kalamazoo	3	18	*	2	12	--	2	--	13	87	106	61	*	--	1	1	6	*	457	477
Kent	19	100	*	3	--	--	27	9	279	111	671	227	*	--	*	35	8	*	2,431	2,522
Lapeer	5	37	--	--	--	--	10	1	19	13	95	51	--	--	--	9	6	--	432	435
Lenawee	14	10	--	8	*	--	1	--	*	62	42	29	--	--	*	45	1	--	455	455
Livingston	--	23	--	--	--	--	1	--	1	85	203	102	--	--	--	2	4	--	495	495
Macomb	7	13	--	--	*	--	1	--	--	10	45	20	--	--	--	6	1	--	160	162
Monroe	4	28	--	12	--	--	2	--	15	10	46	27	--	--	--	7	--	--	220	220
Montcalm	25	116	--	*	--	--	39	14	416	27	557	230	--	--	1	12	13	--	1,910	2,020
Muskegon	105	35	--	*	--	--	51	*	466	38	1,205	403	--	--	--	2	11	--	2,983	3,231
Oakland	9	36	--	*	--	--	6	*	58	48	180	65	--	--	--	15	8	--	569	629
Ottawa	58	46	--	--	3	--	21	4	83	24	306	112	--	--	--	10	4	--	968	1,135
Saginaw	2	64	--	--	--	--	40	2	52	5	121	92	--	--	--	9	7	--	558	558
Sanilac	3	27	--	--	--	--	13	1	20	5	3	--	--	--	--	12	2	--	146	147
Shiawassee	7	56	--	1	--	--	18	--	42	20	70	35	--	--	--	31	4	--	474	474
St. Clair	17	55	--	--	--	--	49	--	8	19	102	53	--	--	--	15	4	--	465	467
St. Joseph	--	31	*	66	9	--	--	--	38	70	232	121	*	--	1	6	2	*	773	794
Tuscola	1	59	--	--	--	--	36	--	261	13	27	17	--	--	--	17	6	--	573	588
Van Buren	49	28	*	2	7	--	59	5	239	280	466	161	*	--	1	20	11	*	2,063	2,125
Washtenaw	--	11	--	38	--	--	1	*	1	40	108	209	--	--	1	3	1	--	477	477
Wayne	4	8	--	--	*	--	3	--	118	3	43	26	--	--	--	18	3	--	281	306
Total	486	1,415	*	251	296	48	601	46	2,576	2,233	7,322	3,228	1	--	13	646	221	2	27,987	29,080
State total	4,465	7,745	2	252	296	48	1,802	5,218	87,216	4,653	24,514	6,513	1	1	13	10,060	327	3	258,867	337,986

** = Less than 500 cubic feet.*

Table 21.--Sawtimber removals from timberland for industrial roundwood by Forest Survey Unit, county, and species group, Michigan, 1998

(In thousand board feet) [1]

Forest Survey Unit and county	Balsam fir	Red-cedar	Tamarack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	River birch	Yellow birch	Hickory	Hackberry
EASTERN UPPER PENINSULA																		
Alger	666	--	55	506	823	2,200	547	--	314	778	5,888	3,700	7,785	1,093	--	1,438	--	--
Chippewa	1,181	--	61	1,442	4,101	3,974	538	--	814	346	12,457	1,690	2,816	580	--	218	--	--
Delta	2,535	--	123	2,791	2,329	2,927	485	--	1,631	717	13,539	2,738	4,811	1,603	--	691	--	--
Luce	275	--	18	611	5,857	3,290	819	--	267	1,421	12,558	3,243	5,798	437	--	634	--	--
Mackinac	1,379	--	44	1,329	3,198	3,922	419	--	899	320	11,510	1,856	3,810	1,319	--	270	--	--
Menominee	667	--	79	715	196	496	761	--	2,515	255	5,683	1,600	2,786	1,243	--	313	*	--
Schoolcraft	1,175	--	59	2,576	7,456	4,785	854	--	939	550	18,394	2,416	3,661	1,022	--	419	--	--
Total	7,878	--	439	9,970	23,960	21,594	4,423	--	7,379	4,386	80,029	17,243	31,468	7,297	--	3,982	*	--
WESTERN UPPER PENINSULA																		
Baraga	1,048	--	61	3,290	3,564	2,291	661	--	434	3,229	14,578	4,838	14,748	1,020	--	2,517	--	--
Dickinson	2,227	--	70	3,230	2,437	1,403	768	--	492	338	10,966	1,308	3,974	1,026	--	390	1	--
Gogebic	1,046	--	9	2,380	1,483	1,503	123	--	267	1,152	7,963	3,813	10,183	619	--	1,432	7	--
Houghton	1,607	--	58	2,478	1,596	2,954	294	--	274	1,157	10,417	5,562	16,571	1,118	--	2,441	*	--
Iron	3,622	--	214	3,415	2,974	2,547	723	--	316	949	14,761	4,511	10,303	2,426	--	2,345	*	--
Keweenaw	416	--	10	697	105	89	274	--	304	390	2,286	2,268	3,296	623	--	838	--	--
Marquette	3,456	--	197	5,374	12,949	2,259	1,376	--	854	3,386	29,850	5,846	12,192	2,491	--	1,540	*	--
Ontonagon	300	--	5	739	113	2,380	111	--	139	745	4,532	3,362	7,341	492	--	1,799	1	--
Total	13,722	--	626	21,603	25,221	15,426	4,331	--	3,079	11,346	95,353	31,507	78,607	9,815	--	13,303	9	--
NORTHERN LOWER PENINSULA																		
Alcona	55	--	--	3	730	2,190	148	18	6	--	3,149	1,287	1,105	333	--	*	--	--
Alpena	206	--	5	27	388	385	90	61	939	--	2,100	1,490	548	468	--	--	--	--
Antrim	32	--	*	8	1,803	1,116	85	--	58	41	3,144	951	5,917	237	--	64	1	--
Arenac	1	--	--	--	45	33	18	--	27	--	124	1,052	158	66	--	*	1	--
Bay	--	--	--	--	--	--	--	--	--	--	--	240	1	42	--	--	--	--
Benzie	1	--	1	1	372	1,235	13	--	1	50	1,673	1,330	4,680	79	--	20	7	--
Charlevoix	13	--	3	5	279	1,535	74	--	67	20	1,995	491	5,161	378	--	145	1	--
Cheboygan	227	--	*	117	2,905	4,458	161	15	76	3	7,961	1,285	3,934	431	--	8	--	--
Clare	1	--	3	--	214	1,771	143	--	2	--	2,134	2,732	607	101	--	7	11	--
Crawford	1	--	--	1	6,369	3,568	111	--	--	9	10,059	645	704	63	--	--	--	--
Emmet	12	--	*	3	599	1,445	78	--	60	15	2,213	995	6,678	282	--	29	--	--
Gladwin	*	--	--	--	117	302	97	--	73	1	591	1,924	196	263	--	15	3	--
Grand Traverse	--	--	17	--	474	4,350	104	--	5	41	4,992	1,447	3,279	81	--	9	11	--
Iosco	5	--	--	*	896	3,211	534	--	79	2	4,726	1,430	746	184	--	*	1	--
Isabella	--	--	--	1	128	410	40	--	1	15	595	1,356	1,041	107	--	15	2	--
Kalkaska	27	--	2	17	2,054	7,771	166	--	8	74	10,119	1,280	3,548	179	--	30	4	--
Lake	--	--	1	--	1,350	2,232	298	--	10	16	3,908	1,288	601	79	--	8	7	--
Leelanau	1	--	3	1	7	1,444	67	--	18	16	1,557	139	2,671	31	--	26	*	--
Manistee	--	--	6	--	315	2,280	152	--	3	23	2,778	2,839	4,796	89	--	29	5	--
Mason	--	--	--	--	62	1,614	112	--	1	10	1,799	1,404	1,799	46	--	10	43	--
Mecosta	--	--	1	19	82	1,095	494	--	2	78	1,771	1,427	1,597	125	--	41	11	--
Midland	--	--	--	--	8	99	64	--	--	22	193	2,501	259	201	--	9	27	--
Missaukee	4	--	2	4	1,563	2,068	64	--	30	1	3,737	1,850	1,477	209	--	8	4	--
Montmorency	201	--	--	18	1,848	1,589	154	76	18	--	3,904	2,181	2,017	418	--	81	--	--
Newaygo	--	--	3	--	192	3,983	666	--	--	45	4,888	3,805	1,789	36	--	16	89	--
Oceana	--	--	1	4	409	5,775	49	--	--	35	6,273	1,364	1,380	22	--	21	1	--
Ogemaw	2	--	--	*	1,142	863	17	--	36	--	2,061	1,066	831	160	--	79	1	--
Osceola	1	--	1	1	244	961	47	--	16	57	1,329	1,550	2,974	128	--	17	9	--
Oscoda	105	--	--	7	4,739	2,932	279	30	5	--	8,097	1,177	1,019	328	--	3	--	--
Otsego	64	--	--	4	3,767	5,777	130	24	7	--	9,773	1,003	4,533	245	--	11	--	--
Presque Isle	402	--	--	155	1,063	1,094	102	79	218	--	3,114	1,216	1,131	459	--	3	--	--
Roscommon	94	--	--	35	3,812	1,898	36	--	20	--	5,895	1,531	81	218	--	2	1	--
Wexford	49	--	6	250	1,459	11,493	287	--	8	68	13,619	1,111	4,084	59	--	34	5	--
Total	1,505	--	56	684	39,433	80,976	4,876	305	1,794	643	130,271	47,383	71,343	6,148	--	741	244	--

(Table 21 continued)

Forest Survey Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	River birch	Yellow birch	Hickory	Hack-berry
SOUTHERN LOWER PENINSULA																		
Allegan	--	--	--	--	17	303	67	--	--	4	391	1,230	275	126	--	8	209	4
Barry	--	--	1	13	7	399	*	--	--	--	421	905	2,249	52	6	1	222	6
Berrien	--	--	--	--	--	16	1	--	--	--	18	212	1,187	--	17	--	57	5
Branch	--	--	--	--	--	--	--	--	--	--	--	639	586	3	--	--	35	--
Calhoun	--	--	--	--	--	1	--	--	--	--	1	585	152	2	5	2	272	4
Cass	--	--	--	--	--	--	--	--	--	--	--	1,363	379	--	5	8	93	5
Clinton	--	--	--	--	5	465	--	--	--	--	469	787	228	6	--	--	61	--
Eaton	--	--	--	--	--	69	--	--	--	--	69	273	1,042	2	--	--	121	--
Genesee	--	--	--	--	--	--	1	--	--	--	1	157	417	*	--	--	19	--
Gratiot	--	--	--	--	--	14	71	--	--	--	85	636	70	3	--	--	--	--
Hillsdale	--	--	--	--	--	--	3	--	--	--	3	79	874	1	--	--	21	--
Huron	--	--	--	--	--	--	--	--	--	--	--	270	91	5	--	--	6	--
Ingham	--	--	--	--	--	--	--	--	--	--	--	186	218	2	--	--	26	--
Ionia	--	--	9	7	--	--	5	--	--	--	21	135	391	19	--	--	137	--
Jackson	--	--	--	--	--	--	--	--	--	2	2	167	--	2	6	--	285	4
Kalamazoo	--	--	--	*	--	58	59	--	--	--	117	448	132	3	--	--	69	2
Kent	--	--	1	--	--	468	26	--	--	--	496	1,780	2,540	49	9	3	118	2
Lapeer	--	--	--	--	4	10	--	--	--	--	14	382	583	7	--	--	38	--
Lenawee	--	--	--	--	--	--	--	--	--	--	--	76	1,090	--	--	--	198	--
Livingston	--	--	--	--	--	1	--	--	--	--	1	276	12	3	--	--	94	--
Macomb	--	2	--	--	--	10	--	--	--	--	12	139	139	--	--	1	26	--
Monroe	--	--	--	--	--	--	--	--	--	--	--	103	163	--	--	--	114	--
Montcalm	--	--	11	--	1	382	228	--	--	7	629	1,334	337	44	3	4	36	--
Muskegon	--	4	--	3	26	1,196	172	--	--	18	1,418	1,624	180	69	--	1	62	--
Oakland	--	--	--	2	171	12	55	--	--	--	239	311	347	--	--	--	124	--
Ottawa	--	--	--	--	4	425	520	--	--	12	961	678	592	38	--	11	7	--
Saginaw	--	--	--	--	--	*	1	--	--	--	1	536	232	12	--	--	52	--
Sanilac	--	--	--	--	2	--	--	--	--	--	2	170	88	8	--	--	4	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	--	262	244	2	--	--	217	--
St. Clair	--	--	--	--	--	10	4	--	--	--	14	395	342	*	--	--	37	--
St. Joseph	--	--	--	--	--	122	1	--	--	--	123	285	122	--	3	--	186	2
Tuscola	--	--	--	--	19	15	--	--	--	--	35	288	380	56	--	--	10	--
Van Buren	*	--	--	*	--	304	54	--	--	--	359	1,672	1,390	--	9	--	139	4
Washtenaw	--	--	--	--	--	--	--	--	--	--	--	129	14	4	3	--	186	--
Wayne	--	--	--	1	79	10	2	--	--	--	92	97	27	8	--	--	21	--
Total	*	6	23	26	335	4,289	1,272	--	--	43	5,993	18,609	17,111	528	66	40	3,303	37
State total	23,105	6	1,143	32,283	88,949	122,285	14,901	305	12,252	16,418	311,647	114,742	198,529	23,788	66	18,066	3,555	37

(Table 21 continued on next page)

(Table 21 continued)

Forest Survey Unit and county	Beech	Ash	Butter-nut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Black locust	Willow	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
EASTERN UPPER PENINSULA																				
Alger	2,347	316	*	--	--	--	--	113	1,543	449	209	9	--	--	--	360	*	--	19,363	25,251
Chippewa	216	163	--	--	--	--	*	77	5,504	112	91	2	--	--	--	82	*	--	11,551	24,009
Delta	802	318	*	--	--	--	--	234	5,979	261	252	15	--	--	--	634	*	--	18,338	31,877
Luce	1,882	3,792	*	--	--	--	--	65	1,985	217	114	1	--	--	--	132	--	--	18,301	30,859
Mackinac	308	179	*	--	--	--	--	107	4,904	110	225	--	--	--	--	230	--	--	13,319	24,829
Menominee	192	612	--	--	--	--	--	243	7,785	76	578	4	--	--	--	581	6	--	16,020	21,703
Schoolcraft	582	172	*	--	--	--	--	151	2,292	187	11	1	--	--	--	127	*	--	11,041	29,435
Total	6,329	5,554	1	--	--	--	*	991	29,993	1,411	1,480	32	--	--	--	2,147	6	--	107,933	187,962
WESTERN UPPER PENINSULA																				
Baraga	305	552	4	--	--	--	--	308	5,374	229	669	15	--	--	--	1,419	2	--	32,001	46,579
Dickinson	116	271	--	--	--	--	*	460	8,886	70	438	2	--	*	--	2,109	30	--	19,082	30,048
Gogebic	359	1,002	*	--	--	--	*	98	7,197	458	244	13	--	*	--	1,524	12	--	26,961	34,923
Houghton	414	668	*	--	--	--	--	504	7,857	271	880	3	--	--	--	1,320	2	--	37,611	48,028
Iron	444	495	4	--	--	--	*	632	9,164	527	1,297	16	--	*	--	2,023	12	--	34,198	48,959
Keweenaw	215	146	--	--	--	--	--	68	805	133	826	1	--	--	--	201	*	--	9,418	11,704
Marquette	1,101	378	*	--	--	--	*	884	12,777	303	1,579	27	--	*	--	875	5	--	39,998	69,848
Ontonagon	359	709	--	--	--	--	*	368	10,268	325	222	4	--	*	--	1,861	4	--	27,116	31,648
Total	3,313	4,220	9	--	--	--	1	3,321	62,329	2,315	6,154	80	--	1	--	11,333	68	--	226,384	321,738
NORTHERN LOWER PENINSULA																				
Alcona	170	3,386	--	--	--	--	--	931	11,356	48	6,749	287	--	--	--	473	33	--	26,158	29,308
Alpena	89	335	--	--	--	--	--	376	5,126	1	1,490	69	--	--	--	206	3	--	10,201	12,301
Antrim	347	415	--	--	--	--	2	17	1,969	85	113	7	--	--	--	2,502	24	--	12,653	15,797
Arenac	32	316	--	--	--	--	111	26	2,186	3	246	17	--	--	--	36	*	--	4,250	4,374
Bay	--	106	--	--	--	--	54	--	365	12	15	39	--	--	--	8	1	--	886	886
Benzie	264	386	--	--	--	--	--	5	932	111	1,311	75	--	--	--	520	*	--	9,720	11,393
Charlevoix	239	484	--	--	--	--	2	35	903	36	101	5	--	--	--	1,654	8	--	9,642	11,637
Cheboygan	122	245	--	--	--	--	--	193	6,573	54	649	115	--	--	--	1,344	2	--	14,955	22,916
Clare	123	281	--	--	--	--	145	54	7,995	218	3,607	494	--	--	--	74	11	--	16,460	18,593
Crawford	71	88	--	--	--	--	--	4	1,743	17	1,772	142	--	--	--	165	15	--	5,430	15,489
Emmet	534	435	--	--	--	--	--	138	3,099	149	216	1	--	--	--	832	8	--	13,395	15,608
Gladwin	49	348	--	--	--	--	155	185	6,922	11	1,051	295	--	--	--	106	11	--	11,532	12,123
Grand Traverse	144	209	--	--	--	--	5	12	1,155	71	1,854	250	--	--	--	408	3	--	8,938	13,930
Iosco	7	370	--	--	--	--	4,220	154	5,350	12	996	90	--	--	--	180	3	--	13,743	18,470
Isabella	87	268	--	--	--	--	212	99	2,853	38	932	164	--	--	--	86	25	--	7,283	7,878
Kalkaska	165	144	--	*	--	--	--	21	2,594	83	613	63	--	--	--	753	5	*	9,482	19,600
Lake	101	427	--	--	--	--	96	5	2,327	179	5,327	1,176	--	--	--	247	9	--	11,876	15,784
Leelanau	250	677	--	--	--	--	--	3	173	12	90	6	--	--	--	355	9	--	4,440	5,997
Manistee	418	409	--	--	--	--	2	43	1,500	450	3,580	667	--	--	--	327	3	--	15,155	17,933
Mason	95	186	--	--	--	--	--	22	1,323	257	3,930	573	--	--	--	91	6	--	9,785	11,584
Mecosta	129	614	--	--	--	--	34	57	2,617	267	1,378	221	--	--	--	185	32	--	8,737	10,508
Midland	75	436	--	--	--	--	149	18	2,759	41	860	631	--	--	--	201	3	--	8,171	8,363
Missaukee	127	370	--	--	--	--	*	21	3,482	97	1,454	202	--	--	--	209	7	--	9,515	13,252
Montmorency	158	347	--	--	--	--	--	341	5,995	28	3,485	159	--	--	--	943	4	--	16,156	20,061
Newaygo	252	644	--	1	--	--	61	30	1,827	747	7,879	1,834	--	--	--	320	26	1	19,358	24,246
Oceana	236	323	--	--	--	--	74	67	1,476	358	2,618	420	--	--	--	111	11	1	8,483	14,756
Ogemaw	43	1,774	--	1	--	--	--	67	7,830	4	3,504	50	--	--	--	137	1	--	15,549	17,610
Osceola	442	622	--	--	--	--	12	39	3,373	286	2,691	140	--	--	--	375	10	--	12,666	13,995
Oscoda	138	200	--	--	--	--	--	260	4,039	62	3,172	132	--	--	--	873	1	--	11,405	19,503
Otsego	232	119	--	--	--	--	--	40	3,066	19	527	30	--	--	--	981	6	--	10,811	20,584
Presque Isle	88	247	--	--	--	--	--	331	4,929	*	1,466	69	--	--	--	304	1	--	10,243	13,357
Roscommon	10	404	--	--	--	--	32	24	3,800	17	2,529	306	--	--	--	62	--	--	9,018	14,913
Wexford	309	456	--	*	--	--	--	10	1,285	576	848	75	--	--	--	552	15	1	9,421	23,039
Total	5,544	16,069	--	3	--	--	5,367	3,628	112,925	4,348	67,052	8,802	--	--	--	15,622	295	4	365,518	495,789

(Table 21 continued on next page)

(Table 21 continued)

Forest Survey Unit and county	Beech	Ash	Butter-nut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Black locust	Willow	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
SOUTHERN LOWER PENINSULA																				
Allegan	167	511	*	50	855	--	92	--	326	589	3,331	1,679	1	--	8	136	67	1	9,666	10,057
Barry	147	242	*	71	40	--	18	--	69	968	3,014	468	1	--	8	227	77	2	8,793	9,213
Berrien	61	92	*	38	358	245	96	1	2	775	398	263	1	--	12	75	50	1	3,945	3,962
Branch	4	201	--	16	14	--	21	--	30	191	335	155	--	--	--	37	11	--	2,278	2,278
Calhoun	58	461	*	32	41	--	253	--	284	861	550	445	1	--	5	356	103	1	4,475	4,476
Cass	20	116	*	143	47	--	11	--	34	1,280	1,450	302	1	--	4	51	64	2	5,380	5,380
Clinton	--	56	--	33	--	--	2	--	161	262	159	55	--	--	--	51	17	--	1,877	2,346
Eaton	71	446	--	69	3	--	16	--	2	235	265	203	--	--	2	248	93	--	3,089	3,158
Genesee	34	168	--	23	--	--	34	--	11	32	342	99	--	--	--	96	28	--	1,460	1,461
Gratiot	--	256	--	--	--	--	197	--	186	7	686	164	--	--	--	151	22	--	2,378	2,463
Hillsdale	--	99	--	47	--	--	*	--	1	147	129	55	--	--	--	57	6	--	1,516	1,518
Huron	7	224	--	--	--	--	317	58	152	22	39	26	--	--	--	29	6	--	1,251	1,251
Ingham	16	155	--	--	--	--	13	--	7	74	88	35	--	--	--	57	19	--	897	897
Ionia	259	191	--	9	--	--	57	--	247	452	637	59	--	--	--	225	39	--	2,856	2,877
Jackson	--	170	*	118	--	--	3	--	6	626	1,291	776	1	--	6	103	14	1	3,580	3,582
Kalamazoo	14	100	*	13	61	--	9	--	31	447	457	214	*	--	4	7	33	*	2,044	2,161
Kent	79	514	*	17	--	--	40	13	624	573	3,134	752	*	--	2	159	41	*	10,449	10,945
Lapeer	27	202	--	--	--	--	52	3	86	68	496	268	--	--	--	48	32	--	2,291	2,304
Lenawee	79	56	--	44	1	--	4	--	1	317	216	148	--	--	2	229	3	--	2,465	2,465
Livingston	--	126	--	--	--	--	6	--	5	438	1,060	533	--	--	--	11	18	--	2,582	2,583
Macomb	40	72	--	--	1	--	6	--	--	51	233	102	--	--	--	31	8	--	849	860
Monroe	20	153	--	69	--	--	12	--	67	49	240	141	--	--	--	37	--	--	1,167	1,167
Montcalm	108	626	--	*	--	--	126	20	882	139	2,634	900	--	--	3	64	69	--	7,331	7,960
Muskegon	461	182	--	1	--	--	74	*	871	194	5,381	1,071	--	--	--	6	26	--	10,204	11,622
Oakland	50	197	--	2	--	--	29	1	107	246	901	341	--	--	--	76	41	--	2,773	3,013
Ottawa	310	251	--	--	14	--	110	6	210	125	1,425	390	--	--	--	45	22	--	4,235	5,195
Saginaw	8	351	--	--	--	--	207	3	169	23	626	478	--	--	--	44	34	--	2,776	2,777
Sanilac	18	147	--	--	--	--	67	3	38	26	16	--	--	--	--	51	9	--	645	647
Shiawassee	27	299	--	7	--	--	44	--	70	105	264	75	--	--	--	99	10	--	1,725	1,725
St. Clair	91	302	--	--	--	--	252	--	36	98	529	277	--	--	--	75	20	--	2,452	2,466
St. Joseph	--	168	*	365	45	--	--	--	74	359	828	220	*	--	3	33	11	*	2,705	2,829
Tuscola	7	325	--	--	--	--	182	--	1,002	65	142	89	--	--	--	82	30	--	2,658	2,692
Van Buren	216	152	*	11	37	--	153	7	395	1,459	1,989	370	1	--	7	62	40	1	8,114	8,473
Washtenaw	--	61	--	212	--	--	7	1	5	209	563	1,093	--	--	3	17	6	--	2,513	2,513
Wayne	19	40	--	--	1	--	13	--	217	13	221	134	--	--	--	85	14	--	910	1,003
Total	2,417	7,716	1	1,390	1,520	245	2,523	116	6,409	11,526	34,068	12,379	6	--	68	3,160	1,082	10	124,328	130,321
State total	17,603	33,559	10	1,393	1,520	245	7,891	8,055	211,655	19,599	108,755	21,294	6	1	68	32,262	1,451	13	824,163	1,135,809

[1] *International 1/4-inch rule.*

** = Less than 500 board feet.*

Rows and columns may not sum due to rounding.

Table 22.--Harvest residues generated by industrial roundwood harvesting by Forest Survey Unit, county, and species group, Michigan, 1998

(In thousand cubic feet)

Forest Survey Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	River birch	Yellow birch	Hickory	Hack-berry
EASTERN UPPER PENINSULA																		
Alger	86	--	7	62	119	183	34	--	33	85	610	573	1,069	106	--	167	--	--
Chippewa	124	--	8	169	379	360	37	--	81	44	1,203	198	336	68	--	34	--	--
Delta	294	--	16	304	291	294	35	--	173	89	1,495	328	607	175	--	78	--	--
Luce	36	--	2	77	619	291	49	--	27	196	1,296	372	644	44	--	78	--	--
Mackinac	150	--	6	151	374	337	26	--	88	44	1,176	234	464	133	--	45	--	--
Menominee	86	--	10	88	28	47	47	--	261	29	597	231	412	125	--	51	*	--
Schoolcraft	144	--	8	283	855	535	52	--	96	71	2,044	324	563	116	--	68	--	--
Total	919	--	57	1,133	2,665	2,048	280	--	760	558	8,420	2,260	4,096	766	--	520	*	--
WESTERN UPPER PENINSULA																		
Baraga	135	--	8	335	398	185	46	--	45	404	1,556	587	1,432	131	--	213	--	--
Dickinson	257	--	9	341	279	125	51	--	52	51	1,165	195	433	109	--	54	*	--
Gogebic	115	--	1	241	207	104	10	--	27	155	859	571	1,219	95	--	187	1	--
Houghton	192	--	8	267	176	241	23	--	29	134	1,070	742	1,779	136	--	242	*	--
Iron	438	--	28	380	354	273	53	--	37	127	1,690	683	1,363	262	--	230	*	--
Keweenaw	53	--	1	87	15	10	17	--	30	60	275	319	501	75	--	92	--	--
Marquette	399	--	25	565	1,375	244	88	--	92	459	3,249	884	1,790	320	--	218	*	--
Ontonagon	35	--	1	87	15	161	12	--	14	103	428	536	1,079	57	--	191	*	--
Total	1,625	--	81	2,302	2,821	1,344	298	--	326	1,495	10,293	4,516	9,596	1,185	--	1,426	2	--
NORTHERN LOWER PENINSULA																		
Alcona	2	--	--	*	71	144	8	*	1	--	227	101	106	42	--	*	--	--
Alpena	8	--	*	3	15	22	5	1	124	--	179	99	52	47	--	--	--	--
Antrim	*	--	*	*	23	68	4	--	5	2	103	75	390	32	--	4	*	--
Arenac	*	--	--	--	2	3	1	--	4	--	10	90	32	9	--	*	*	--
Bay	--	--	--	--	--	--	--	--	--	--	--	21	*	4	--	--	--	--
Benzie	*	--	*	*	7	71	1	--	*	3	81	107	295	8	--	2	1	--
Charlevoix	*	--	*	*	5	92	4	--	5	1	107	36	350	22	--	8	*	--
Cheboygan	12	--	*	11	105	268	8	*	6	*	411	100	245	35	--	*	--	--
Clare	*	--	*	--	24	109	8	--	*	--	141	205	52	9	--	*	1	--
Crawford	*	--	--	*	477	229	6	--	--	1	713	61	69	5	--	--	--	--
Emmet	*	--	*	*	10	86	4	--	5	1	106	74	400	17	--	2	--	--
Gladwin	*	--	--	--	11	20	5	--	7	*	44	176	24	35	--	1	*	--
Grand Traverse	--	--	2	--	31	254	6	--	*	2	295	114	200	7	--	1	1	--
Iosco	*	--	--	*	57	186	31	--	8	*	281	119	47	21	--	*	*	--
Isabella	--	--	--	*	6	26	2	--	*	1	35	142	87	12	--	1	*	--
Kalkaska	2	--	*	2	175	530	9	--	*	6	725	124	233	14	--	2	*	--
Lake	--	--	*	--	141	135	17	--	1	1	294	128	95	13	--	1	1	--
Leelanau	*	--	*	*	1	83	4	--	2	1	91	11	156	2	--	1	*	--
Manistee	--	--	1	--	44	132	8	--	*	1	185	218	302	7	--	2	1	--
Mason	--	--	--	--	6	93	6	--	*	1	105	105	122	4	--	1	2	--
Mecosta	--	--	*	2	10	65	28	--	*	4	110	133	116	9	--	5	1	--
Midland	--	--	--	--	1	8	4	--	--	1	14	203	47	21	--	1	2	--
Missaukee	*	--	*	*	152	135	3	--	2	*	293	218	129	28	--	1	1	--
Montmorency	6	--	--	2	113	93	9	2	2	--	226	155	174	45	--	5	--	--
Newaygo	--	--	*	--	18	230	38	--	--	3	290	252	126	4	--	1	5	--
Oceana	--	--	*	*	40	334	3	--	--	2	379	131	137	2	--	1	*	--
Ogemaw	*	--	--	*	96	50	1	--	5	--	152	78	62	15	--	4	*	--
Osceola	*	--	*	*	36	62	3	--	1	3	105	114	191	11	--	1	1	--
Oscoda	2	--	--	*	327	169	16	1	*	--	515	88	98	36	--	1	--	--
Otsego	2	--	--	*	156	369	6	*	1	--	535	78	278	17	--	1	--	--
Presque Isle	23	--	--	16	52	68	5	2	21	--	186	84	79	52	--	*	--	--
Roscommon	1	--	--	2	284	116	2	--	1	--	406	165	8	25	--	*	*	--
Wexford	5	--	1	24	129	684	16	--	*	4	863	99	258	7	--	2	1	--
Total	64	--	5	64	2,626	4,932	272	6	200	38	8,207	3,903	4,958	617	--	48	20	--

(Table 22 continued on next page)

(Table 22 continued)

Forest Survey Unit and county	Balsam fir	Red-cedar	Tama-rack	Spruce	Jack pine	Red pine	White pine	Other pine	N. white-cedar	Hemlock	Total soft-woods	Soft maple	Hard maple	White birch	River birch	Yellow birch	Hickory	Hack-berry
SOUTHERN LOWER PENINSULA																		
Allegan	--	--	--	--	2	17	4	--	--	*	23	70	16	8	--	*	12	*
Barry	--	--	*	1	1	23	*	--	--	--	25	54	139	3	*	*	12	*
Berrien	--	--	--	--	--	1	*	--	--	--	1	13	76	--	1	--	3	*
Branch	--	--	--	--	--	--	--	--	--	--	--	38	33	*	--	--	2	--
Calhoun	--	--	--	--	--	*	--	--	--	--	*	35	9	*	*	*	15	*
Cass	--	--	--	--	--	--	--	--	--	--	--	81	21	--	*	*	5	*
Clinton	--	--	--	--	*	27	--	--	--	--	27	47	13	*	--	--	3	--
Eaton	--	--	--	--	--	4	--	--	--	--	4	16	59	*	--	--	6	--
Genesee	--	--	--	--	--	--	*	--	--	--	*	9	27	*	--	--	1	--
Gratiot	--	--	--	--	--	1	4	--	--	--	5	38	4	*	--	--	--	--
Hillsdale	--	--	--	--	--	--	*	--	--	--	*	5	53	*	--	--	1	--
Huron	--	--	--	--	--	--	--	--	--	--	--	16	5	*	--	--	*	--
Ingham	--	--	--	--	--	--	--	--	--	--	--	11	12	*	--	--	2	--
Ionia	--	--	1	1	--	--	*	--	--	--	2	8	22	1	--	--	7	--
Jackson	--	--	--	--	--	--	--	--	--	*	*	10	--	*	*	--	15	*
Kalamazoo	--	--	--	*	--	3	3	--	--	--	7	26	7	*	--	--	4	*
Kent	--	--	*	--	--	27	2	--	--	--	28	121	174	3	1	*	10	*
Lapeer	--	--	--	--	*	1	--	--	--	--	1	23	37	*	--	--	2	--
Lenawee	--	--	--	--	--	--	--	--	--	--	--	5	66	--	--	--	11	--
Livingston	--	--	--	--	--	*	--	--	--	--	*	17	1	*	--	--	5	--
Macomb	--	*	--	--	--	1	--	--	--	--	1	8	8	--	--	*	1	--
Monroe	--	--	--	--	--	--	--	--	--	--	--	6	9	--	--	--	6	--
Montcalm	--	--	1	--	*	22	13	--	--	*	37	97	35	3	*	*	5	--
Muskegon	--	*	--	*	3	69	10	--	--	1	83	128	28	4	--	*	14	--
Oakland	--	--	--	*	2	1	3	--	--	--	6	19	19	--	--	--	7	--
Ottawa	--	--	--	--	*	25	30	--	--	1	56	46	45	2	--	1	*	--
Saginaw	--	--	--	--	--	*	*	--	--	--	*	34	15	1	--	--	3	--
Sanilac	--	--	--	--	*	--	--	--	--	--	*	12	6	1	--	--	*	--
Shiawassee	--	--	--	--	--	--	--	--	--	--	--	21	15	*	--	--	46	--
St. Clair	--	--	--	--	--	1	*	--	--	--	1	24	19	*	--	--	2	--
St. Joseph	--	--	--	--	--	7	*	--	--	--	7	15	7	--	*	--	10	*
Tuscola	--	--	--	--	3	2	--	--	--	--	5	17	25	3	--	--	1	--
Van Buren	*	--	--	*	--	18	3	--	--	--	21	112	94	--	1	--	12	*
Washtenaw	--	--	--	--	--	--	--	--	--	--	--	8	1	*	*	--	10	--
Wayne	--	--	--	*	1	1	*	--	--	--	2	6	1	*	--	--	1	--
Total	*	1	2	2	12	249	73	--	--	3	343	1,195	1,101	32	5	2	234	2
State total	2,609	1	146	3,502	8,124	8,572	924	6	1,287	2,093	27,263	11,875	19,751	2,600	5	1,996	256	2

(Table 22 continued on next page)

(Table 22 continued)

Forest Survey Unit and county	Beech	Ash	Butter-nut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black-cherry	Red oak group	White oak group	Black locust	Willow	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
EASTERN UPPER PENINSULA																				
Alger	212	50	*	--	--	--	--	22	200	54	16	*	--	--	--	54	*	19	2,542	3,153
Chippewa	17	16	--	--	--	--	*	15	532	11	6	*	--	--	--	12	*	14	1,259	2,462
Delta	72	30	*	--	--	--	--	46	611	22	14	1	--	--	--	52	*	35	2,071	3,566
Luce	136	216	*	--	--	--	--	13	248	25	8	*	--	--	--	23	--	13	1,820	3,116
Mackinac	40	19	*	--	--	--	--	21	588	13	11	--	--	--	--	22	--	21	1,611	2,787
Menominee	37	45	--	--	--	--	--	44	603	13	28	*	--	--	--	52	*	16	1,658	2,254
Schoolcraft	65	25	*	--	--	--	--	30	307	20	4	*	--	--	--	20	*	31	1,573	3,616
Total	579	401	*	--	--	--	*	190	3,090	159	87	2	--	--	--	235	*	147	12,534	20,954
WESTERN UPPER PENINSULA																				
Baraga	72	69	*	--	--	--	--	60	454	31	37	2	--	--	--	121	*	37	3,246	4,802
Dickinson	28	33	--	--	--	--	*	84	1,016	12	27	1	--	*	--	160	5	8	2,164	3,330
Gogebic	86	135	*	--	--	--	*	19	620	54	42	6	--	*	--	141	2	8	3,186	4,046
Houghton	100	106	*	--	--	--	--	98	777	42	54	1	--	--	--	157	*	35	4,268	5,338
Iron	104	71	*	--	--	--	*	122	1,060	57	69	2	--	*	--	177	1	43	4,246	5,936
Keweenaw	52	27	--	--	--	--	--	13	94	23	50	*	--	--	--	31	*	4	1,280	1,555
Marquette	154	61	*	--	--	--	*	172	1,444	40	95	2	--	*	--	106	*	111	5,396	8,645
Ontonagon	86	108	--	--	--	--	*	71	948	45	23	2	--	*	--	189	*	2	3,338	3,767
Total	681	609	1	--	--	--	*	640	6,413	303	397	16	--	*	--	1,083	9	248	27,125	37,418
NORTHERN LOWER PENINSULA																				
Alcona	16	186	--	--	--	--	--	178	914	3	281	12	--	--	--	39	2	--	1,880	2,107
Alpena	9	26	--	--	--	--	--	68	359	*	56	2	--	--	--	13	*	--	731	911
Antrim	21	33	--	--	--	--	*	2	110	5	8	3	--	--	--	173	1	*	858	961
Arenac	7	22	--	--	--	--	7	4	191	*	10	1	--	--	--	5	*	--	377	387
Bay	--	5	--	--	--	--	3	--	32	1	1	2	--	--	--	*	*	--	69	69
Benzie	22	50	--	--	--	--	--	1	94	7	71	19	--	--	--	42	*	--	719	800
Charlevoix	15	31	--	--	--	--	*	6	63	2	6	2	--	--	--	127	*	--	668	776
Cheboygan	9	16	--	--	--	--	--	36	386	3	26	5	--	--	--	88	*	--	948	1,358
Clare	7	16	--	--	--	--	19	8	577	13	159	29	--	--	--	5	1	--	1,101	1,242
Crawford	6	7	--	--	--	--	--	*	130	1	74	6	--	--	--	13	1	--	373	1,086
Emmet	30	26	--	--	--	--	--	21	232	9	9	*	--	--	--	52	*	*	873	979
Gladwin	10	18	--	--	--	--	16	28	595	1	56	27	--	--	--	12	1	--	998	1,042
Grand Traverse	10	23	--	--	--	--	*	1	95	4	84	17	--	--	--	32	*	*	589	884
Iosco	2	21	--	--	--	--	252	24	354	1	42	4	--	--	--	29	*	--	916	1,198
Isabella	16	14	--	--	--	--	19	17	295	2	40	7	--	--	--	8	4	--	663	699
Kalkaska	11	13	--	*	--	--	--	4	182	5	31	8	--	--	--	52	*	*	679	1,404
Lake	15	55	--	--	--	--	18	1	214	11	259	94	--	--	--	31	1	*	935	1,229
Leelanau	13	35	--	--	--	--	--	*	12	1	4	*	--	--	--	22	1	*	257	347
Manistee	33	30	--	--	--	--	*	8	133	27	163	41	--	--	--	23	*	1	988	1,173
Mason	12	13	--	--	--	--	--	4	96	15	170	28	--	--	--	7	*	1	581	686
Mecosta	21	34	--	--	--	--	2	11	220	16	65	17	--	--	--	12	2	--	664	774
Midland	10	52	--	--	--	--	9	2	252	3	53	44	--	--	--	20	*	--	720	735
Missaukee	16	38	--	--	--	--	*	4	377	6	71	18	--	--	--	23	*	1	930	1,223
Montmorency	16	26	--	--	--	--	--	66	442	2	139	7	--	--	--	79	1	--	1,157	1,383
Newaygo	19	37	--	*	--	--	8	4	138	45	340	83	--	--	--	20	3	5	1,089	1,379
Oceana	33	20	--	--	--	--	7	11	167	22	122	28	--	--	--	7	1	2	691	1,069
Ogemaw	4	98	--	*	--	--	--	13	498	*	148	4	--	--	--	10	*	--	935	1,087
Osceola	26	43	--	--	--	--	1	6	274	17	121	14	--	--	--	26	1	1	847	951
Oscoda	13	17	--	--	--	--	--	51	313	4	130	5	--	--	--	122	*	--	877	1,392
Otsego	14	9	--	--	--	--	--	7	147	1	20	1	--	--	--	69	*	--	641	1,176
Presque Isle	7	16	--	--	--	--	--	57	336	*	51	2	--	--	--	19	*	--	704	890
Roscommon	1	24	--	--	--	--	2	3	347	1	108	15	--	--	--	5	--	--	706	1,112
Wexford	21	43	--	*	--	--	--	1	138	35	47	15	--	--	--	39	1	*	707	1,570
Total	467	1,095	--	*	--	--	364	646	8,714	262	2,962	560	--	--	--	1,222	21	11	25,871	34,079

(Table22 continued on next page)

(Table 22 continued)

Forest Survey Unit and county	Beech	Ash	utternut	Black walnut	Yellow-poplar	Syca-more	Cotton-wood	Balsam poplar	Aspen	Black cherry	Red oak group	White oak group	Black locust	Willow	Sassa-fras	Bass-wood	Elm	Other hard-woods	Total hard-woods	All species
SOUTHERN LOWER PENINSULA																				
Allegan	9	27	*	3	51	--	8	--	13	35	143	75	*	--	*	8	4	*	482	505
Barry	8	13	*	4	2	--	1	--	4	59	131	22	*	--	1	14	5	*	472	497
Berrien	3	5	*	2	21	15	7	*	*	48	17	11	*	--	1	5	3	*	231	232
Branch	*	11	--	1	1	--	1	--	1	11	14	7	--	--	--	2	1	--	122	122
Calhoun	3	24	*	2	2	--	15	--	16	52	23	19	*	--	*	21	6	*	243	244
Cass	1	6	*	8	3	--	1	--	*	77	61	13	*	--	*	3	4	*	286	286
Clinton	--	3	--	2	--	--	*	--	9	16	7	2	--	--	--	3	1	--	107	134
Eaton	4	24	--	4	*	--	1	--	*	14	11	9	--	--	*	15	6	--	169	173
Genesee	2	9	--	2	--	--	2	--	1	2	14	4	--	--	--	6	2	--	80	80
Gratiot	--	14	--	--	--	--	12	--	11	*	29	7	--	--	--	9	1	--	125	130
Hillsdale	--	5	--	3	--	--	*	--	*	9	6	2	--	--	--	3	*	--	88	88
Huron	*	12	--	--	--	--	19	3	14	1	2	1	--	--	--	2	*	--	76	76
Ingham	1	8	--	--	--	--	1	--	1	5	4	2	--	--	--	3	1	--	50	50
Ionia	14	10	--	*	--	--	3	--	14	27	27	3	--	--	--	14	2	--	153	155
Jackson	--	9	*	7	--	--	*	--	*	38	56	34	*	--	*	6	1	*	178	179
Kalamazoo	1	5	*	1	4	--	1	--	1	27	19	9	*	--	*	*	2	*	108	114
Kent	9	35	*	1	--	--	8	3	62	35	149	44	*	--	*	11	2	*	667	695
Lapeer	1	11	--	--	--	--	3	*	5	4	21	12	--	--	--	3	2	--	125	126
Lenawee	4	3	--	3	*	--	*	--	*	19	9	6	--	--	*	14	*	--	139	139
Livingston	--	7	--	--	--	--	*	--	*	26	46	24	--	--	--	1	1	--	128	128
Macomb	2	4	--	--	*	--	*	--	--	3	10	4	--	--	--	2	*	--	43	44
Monroe	1	8	--	4	--	--	1	--	4	3	10	6	--	--	--	2	--	--	60	60
Montcalm	11	36	--	*	--	--	11	4	94	9	122	46	--	--	*	4	4	--	481	518
Muskegon	44	10	--	*	--	--	15	*	94	12	248	61	--	--	--	*	3	--	661	744
Oakland	3	10	--	*	--	--	2	*	1	15	39	16	--	--	--	5	2	--	137	143
Ottawa	18	14	--	--	1	--	7	1	18	7	67	20	--	--	--	3	1	--	252	308
Saginaw	*	19	--	--	--	--	12	*	10	1	26	21	--	--	--	3	2	--	147	147
Sanilac	1	8	--	--	--	--	4	*	5	2	1	--	--	--	--	4	1	--	43	43
Shiawassee	3	17	--	*	--	--	5	--	10	6	15	8	--	--	--	9	1	--	158	158
St. Clair	5	16	--	--	--	--	15	--	2	6	22	12	--	--	--	4	1	--	128	129
St. Joseph	--	9	*	22	3	--	--	--	1	22	35	9	*	--	*	2	1	*	135	142
Tuscola	*	17	--	--	--	--	11	--	66	4	6	4	--	--	--	5	2	--	161	167
Van Buren	23	8	*	1	2	--	19	1	48	91	90	23	*	--	*	6	3	*	536	557
Washtenaw	--	3	--	13	--	--	*	*	*	13	24	49	--	--	*	1	*	--	123	123
Wayne	1	2	--	--	*	--	1	--	2	1	9	6	--	--	--	5	1	--	36	37
Total	173	419	*	81	91	15	187	14	506	701	1,514	590	*	--	4	197	68	1	7,133	7,476
State total	1,899	2,524	1	81	91	15	551	1,490	18,723	1,426	4,961	1,169	*	*	4	2,738	99	407	72,663	99,926

** = Less than 500 cubic feet.*

Rows and columns may not sum due to rounding.

Table 23.--Residue produced at primary wood-using mills by Forest Survey Unit, type of use, and residue type, Michigan, 1998

(In thousand tons, green weight)

Forest Survey Unit and type of use	Wood residue							
	Total		Coarse[1]		Fine [2]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
EASTERN UPPER PENINSULA								
Fiber products	28.90	70.84	20.45	70.84	8.45	--	--	--
Charcoal	0.03	--	--	--	0.03	--	--	--
Industrial fuel-mill	36.15	57.22	0.39	0.74	35.76	56.48	85.46	125.45
Industrial fuel-sold	6.68	32.72	1.32	9.22	5.36	23.50	8.87	21.30
Domestic fuel	0.48	0.93	0.47	0.90	*	0.03	0.17	0.13
Miscellaneous [3]	19.78	6.46	11.46	1.53	8.33	4.93	4.89	9.80
Not used	0.36	0.08	0.18	0.07	0.18	0.02	0.05	--
Total	92.38	168.26	34.27	83.29	58.10	84.97	99.44	156.69
WESTERN UPPER PENINSULA								
Fiber products	168.25	65.88	106.91	65.04	61.35	0.84	--	--
Industrial fuel-mill	8.76	154.19	3.38	18.75	5.38	135.44	21.60	213.36
Industrial fuel-sold	2.58	69.98	1.12	29.11	1.46	40.87	12.76	78.56
Domestic fuel	0.68	2.30	0.58	2.26	0.11	0.04	0.21	0.96
Miscellaneous [3]	0.43	10.62	0.20	4.84	0.23	5.78	7.89	6.15
Not used	0.32	2.67	0.11	1.03	0.21	1.65	0.04	0.44
Total	181.02	305.65	112.29	121.03	68.73	184.62	42.51	299.47
NORTHERN LOWER PENINSULA								
Fiber products	105.71	233.11	97.38	230.60	8.33	2.52	0.02	5.37
Industrial fuel-mill	9.76	46.51	4.93	15.79	4.83	30.72	2.29	20.90
Industrial fuel-sold	46.11	154.78	18.15	61.91	27.96	92.86	17.89	106.75
Domestic fuel	1.47	26.20	1.44	25.23	0.03	0.97	0.50	4.55
Miscellaneous [3]	52.00	182.00	6.90	56.10	45.10	125.90	46.05	139.00
Not used	0.96	7.29	0.41	4.45	0.55	2.84	0.30	2.04
Total	216.01	649.90	129.22	394.09	86.80	255.81	67.05	278.61
SOUTHERN LOWER PENINSULA								
Fiber products	0.12	61.79	0.12	61.79	--	*	--	*
Industrial fuel-mill	*	38.54	*	9.22	--	29.32	*	46.86
Industrial fuel-sold	0.05	32.84	0.01	29.16	0.05	3.68	*	7.17
Domestic fuel	0.84	8.44	0.84	7.41	--	1.03	0.35	4.71
Miscellaneous [3]	0.92	85.41	0.35	26.20	0.57	59.22	0.20	45.06
Not used	0.47	9.47	0.22	6.76	0.25	2.71	0.39	2.37
Total	2.41	236.49	1.53	140.54	0.88	95.95	0.95	106.17

ALL UNITS

Fiber products	302.99	431.63	224.86	428.27	78.13	3.36	0.02	5.38
Charcoal	0.03	--	--	--	0.03	--	--	--
Industrial fuel-mill	54.67	296.46	8.70	44.50	45.97	251.96	109.35	406.58
Industrial fuel-sold	55.42	290.32	20.60	129.41	34.82	160.91	39.52	213.78
Domestic fuel	3.46	37.88	3.33	35.81	0.14	2.07	1.24	10.35
Miscellaneous [3]	73.13	284.50	18.90	88.67	54.23	195.83	59.03	200.01
Not used	2.12	19.52	0.92	12.30	1.20	7.22	0.79	4.85
Total	491.82	1360.30	277.31	738.95	214.51	621.35	209.95	840.94

** = Less than 5 tons.*

[1] *Suitable for chipping such as slabs, edgings, veneer cores, etc.*

[2] *Not suitable for chipping such as sawdust, veneer clippings, etc.*

[3] *Livestock bedding, mulch, small dimension, and specialty items.*

Rows and columns may not sum due to rounding.

Haugen, David E.; Weatherspoon, Anthony.

2003. **Michigan timber industry—an assessment of timber product output and use, 1998.** Resour. Bull. NC-212. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 83 p.

Reports findings of a survey of all primary wood-using mills in Michigan in 1998 and compares those findings with earlier surveys. Production and receipts of industrial roundwood are reported by product, species, and county. Also reports the quantity, type, and disposition of wood and bark residues generated by Michigan's primary wood-using industry.

KEY WORDS: Pulpwood, saw logs, veneer logs, residue, growing stock.

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